GRADE 10

NOVEMBER PAPER 1 EXAMINATION PAPERS

2012 - 2019

MEMOS

Compiled by L Emery

CONTENTS

QUESTION 1

1.1.1	$(m-2n)(m^2-6mn-n^2)$ $=m^3-6m^2n-mn^2-2m^2n+12mn^2+2n^3$ $=m^3-8m^2n+11mn^2+2n^3$	✓ expansion ✓ m^3 ; $+2n^3$ ✓ $-8m^2n+11mn^2$ (3)
1.1.2	$\frac{x^3+1}{x^2-x+1}-\frac{4x^2-3x-1}{4x+1}$ $=\frac{(x+1)(x^2-x+1)}{x^2-x+1}-\frac{(4x+1)(x-1)}{4x+1}$ $=x+1-(x-1)$ $=2$	✓✓ $(x+1)(x^2-x+1)$ ✓ $(4x+1)(x-1)$ ✓ $x+1-(x-1)$ ✓answer (5)
1.2.1	$6x^2-7x-20$ $=(3x+4)(2x-5)$	✓ $(3x+4)$ ✓ $(2x-5)$ (2)
1.2.2	$a^2+a-2ab-2b$ $=a(a+1)-2b(a+1)$ $=(a+1)(a-2b)$	✓grouping ✓ $(1+a)$ ✓ $(a-2b)$ (3)
1.3	Since $7^2=49$ and $8^2=64$ and $49<51<64$, $7<\sqrt{51}<8$ i.e. $\sqrt{51}$ lies between 7 and 8	✓ $49<51<64$ ✓ answer (2)
1.4	Let $x=0,\dot{2}\dot{4}\dot{5}$ Then $1000x=245,\dot{2}\dot{4}\dot{5}$ i.e. $999x=245$ i.e. $x=\frac{245}{999}$ Therefore x is a rational number.	✓ introduce variable ✓ $1000x=245,\dot{2}\dot{4}\dot{5}$ ✓ $999x=245$ ✓ $x=\frac{245}{999}$ (4) **[19]**

QUESTION 2

2.1.1	$x^2 - 4x = 21$ $x^2 - 4x - 21 = 0$ $(x+3)(x-7) = 0$ $x+3=0$ or $x-7=0$ $x=-3$ $x=7$	✓ standard form ✓ factors ✓ answers (3)
2.1.2	$96 = 3x^{\frac{5}{4}}$ $32 = x^{\frac{5}{4}}$ $x = (32)^{\frac{4}{5}}$ $= \left(2^5\right)^{\frac{4}{5}}$ $= 2^4$ $= 16$	✓ $32 = x^{\frac{5}{4}}$ ✓ $x = (32)^{\frac{4}{5}}$ ✓ answer (3)
2.1.3	$R = \frac{2\sqrt{x}}{3S}$ $\frac{3RS}{2} = \sqrt{x}$ $x = \frac{9R^2S^2}{4}$	✓ Multiply by 3S and divide by 2 ✓ Squaring both sides (2)
2.2	$6q + 7p = 3$.....Equation 1 $2q + p = 5$.....Equation 2 $6q + 7p = 3$.....Equation 1 $14q + 7p = 35$.....multiply Equation 2 with 7 .....Equation 3 Equation 3 – Equation 1: $8q = 32$ $q = 4$ $2(4) + p = 5$ $p = -3$	✓ $14q + 7p = 35$ ✓ $8q = 32$ ✓ $q = 4$ ✓ substitution ✓ $p = -3$ (5) **[13]**

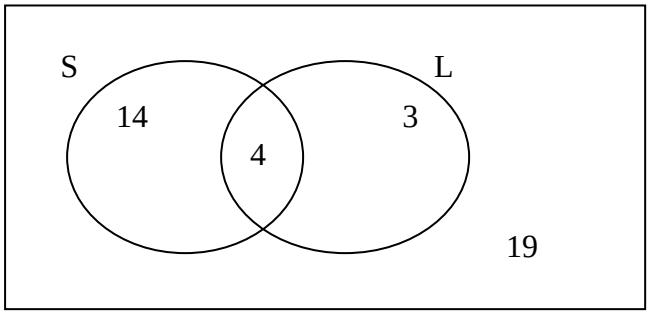
QUESTION 3

3.1.1	10 ; 6 ; 2	✓ 10 ✓ 6 ✓ 2 (3)
3.1.2	$d = -4$ $T_n = -4n + 14$	✓ $-4n$ ✓ 14 (2)
3.1.3	$-4n + 14 < -31$ $-4n < -45$ $n > 11{,}25$ $n = 12$	✓ $-4n + 14 < -31$ ✓ $n > 11{,}25$ ✓ answer (3)
3.2	$T_n = 6n$ $T_{13} = 6(13)$ **OR** $T_{26} = 3(26)$ $= 78$ $= 78$	✓ $6n$ ✓ substitution of 13 ✓ answer (3) **OR** ✓ $3n$ ✓ substitution of 26 ✓ answer (3) **[11]**

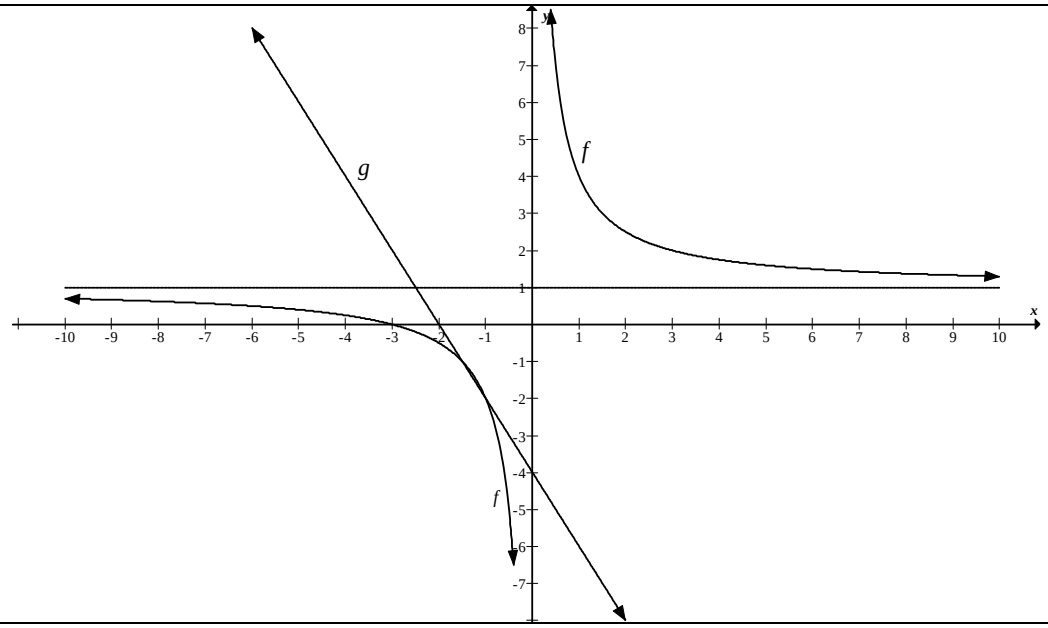
QUESTION 4

4.1	$A = P(1+i)^n$ $= 4500\left(1+\frac{4.25}{100}\right)^{2.5}$ $= R\ 4993.47$	✓$n = 2.5$ ✓substitution ✓answer (3)
4.2.1	Loan amount = R5 999 – R600 = R5 399 Total amount owed = 5 399[1+(0,08)(1,5)] = R6 046,88 Monthly instalment = $\frac{6046.88}{18}$ = R335,94	✓ $y = 0$ ✓5 399 ✓$n = 1{,}5$ ✓Substitution ✓R6 046,88 ✓ ÷ 18 ✓R335,94 (6)
4.2.2	R6 046,88 - R5 399 = R647,88	✓ answer (1)
4.3	1 kg = 1 000 g $\frac{1000}{28{,}35}$ = 35,27336861… ounces 35,27336861… x 978,34 x 8,79 = R303 337,16	✓conversion ✓division ✓multiplication ✓answer (4) **[14]**

QUESTION 5

5.1.1	$A \cap B$ **OR** A and B	✓ answer (1)
5.1.2	$A^{/}$ **OR** not A	✓ answer (1)
5.2	B	✓ answer (1)
5.3.1	19 learners are right-handed and do not play soccer.	✓ answer (1)
5.3.2		✓ 15 ✓ 4 ✓ 2 ✓ 19 (4)
5.3.3 (a)	$P(L \text{ OR } S) = \frac{14+4+3}{40}$ $= \frac{21}{40}$	✓ 15 + 4 + 2 ✓ 40 ✓ answer (3)
5.3.3 (b)	$P(R \text{ AND } S) = \frac{14}{40}$ $= \frac{7}{20}$	✓ $\frac{15}{40}$ ✓ answer (2) **[13]**

QUESTION 6

6.1		✓shape of f ✓ x-int of f ✓ x-intercept of g ✓ y-intercept of g (4)
6.2	$x = 0$ and $y = 1$	✓ answer ✓ answer (2)
6.3	$(-\infty ; 0) \cup (0 ; \infty)$	✓ values ✓ notation (2)
6.4	$\frac{3}{x}+1=-2x-4$ $\frac{3}{x}=-2x-5$ $3=-2x^2-5x$ $2x^2+5x+3=0$ $(2x+3)(x+1)=0$ $x=-\frac{3}{2}$ or $x=-1$	✓$\frac{3}{x}+1=-2x-4$ ✓ standard form ✓ factors ✓✓ answers (5)
6.5	$-1 \le -2x-4 < 3$ $3 \le -2x < 7$ $-1,5 \ge x > -3,5$ $-3,5 < x \le -1,5$ OR $x \in (-3,5 ; -1,5]$	✓ $-1 \le -2x-4 < 3$ ✓ $3 \le -2x < 7$ ✓ answer (3)
6.6	$k(x) = 2(-2x-4)$ $= -4x-8$ y-intercept: $(0 ; -8)$	✓ equation of $k(x)$ ✓ answer (2)
6.7	x-intercept: $(2 ; 0)$ y-intercept: $(0 ; -4)$	✓ x-intercept ✓ y-intercept (2) **[20]**

QUESTION 7

7.1	C(– 2 ; 0)	✓ answer (1)
7.2	$f(x) = ax^2 + q$ $f(x) = a\left(x^2 - 4\right)$ $2{,}5 = a((-3)^2 - 4)$ $2{,}5 = 5a$ $a = \frac{1}{2}$ $f(x) = \frac{1}{2}\left(x^2 - 4\right)$	✓ $f(x) = a\left(x^2 - 16\right)$ ✓ substitution of (– 5 ; 2,25) ✓ answer (3)
7.3	Range of *f*: [–2 ; ∞)	✓ answer (1)
7.4	Range of *h*: (–∞ ; 0]	✓ notation ✓ critical values (2)
7.5	$g(x) = b^x - 4$ $0 = b^2 - 4$ $4 = b^2$ $b = 2$ $g(x) = 2^x - 4$	✓ $g(x) = b^x - 4$ ✓ substitution ✓ answer (3) **[10]**

TOTAL: 100

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Question 1

1.1 $\sqrt{36} < \sqrt{44} < \sqrt{49}$ ✓

$6 < \sqrt{44} < 7$ ✓ (2)

1.2 1.2.1 $(x-3y)(x^2-5xy-y^2)$

$= x^3 - 5x^2y - xy^2 - 3x^2y + 15xy^2 + 3y^3$

$= x^3 - 8x^2y + 14xy^2 + 3y^3$ (3)

1.2.2 $\frac{a^3-1}{a^2+a+1} - \frac{5a^2+4a-1}{5a-1}$

$= \frac{(a-1)(a^2+a+1)}{a^2+a+1} - \frac{(5a-1)(a+1)}{5a-1}$

$= a-1-(a+1)$ ✓

$= a-1-a-1 = -2$ ✓ (5)

1.2.3 $\frac{3^{x+3} - 7.3^x}{3^{x-1}}$

$= \frac{3^x(3^3-7)}{3^x \cdot 3^{-1}}$ ✓

$= \frac{27-7}{\frac{1}{3}}$ ✓

$= 20 \times 3$

$= 60$ ✓ (4)

1.3 1.3.1 $8p^2 - 22p - 21$

$= (4p+3)(2p-7)$ (2)

1.3.2 $k^2 + 4k - 6ky - 24y$

$= k(k+4) - 6y(k+4)$

$= (k+4)(k-6y)$ (3)

[19]

Question 2

2.1 2.1.1 $x^2 - x - 12 = 0$ ✓

$(x-4)(x+3) = 0$ ✓

$x = 4$ or $x = -3$ ✓ (3)

2.1.2 $3\sqrt{x} = 18$

$\sqrt{x} = 6$ ✓

$x = 6^2 = 36$ ✓ (2)

2.1.3 $-6 < -3x < 3$

$2 > x > -1$ ✓✓ (2)

1 mark for correct values

1 mark for correct signs

2.2 $6x + 4y = 5$ ①

$\left(\frac{x}{3} - \frac{y}{2} = 1\right) \times 6$

$2x - 3y = 6$ ✓ ②

② $\times -3$ $-6x + 9y = -18$ ✓ ③

① + ③ $13y = -13$ ✓

$y = -1$ ✓

$6x + 4(-1) = 5$

$6x = 9$ ✓

$x = \frac{9}{6} = \frac{3}{2}$ (5)

[12]

Question 3

3.1 3.1.1 $-5; -9$ ✓ (1)

3.1.2 $T_n = -4n + 15$ ✓ ✓ (2)

3.1.3 $-4n + 15 = -57$ ✓

$-4n = -72$

$n = 18$ ✓ (2)

3.2 $T_n = 2n^2 + 1$

$\therefore T_3 = 2(3)^2 + 1$ ✓

$= 19$ ✓ (2)

3.3 $3x + 4 - (4x - 3) = 4x - 3 - (2x - 1)$ ✓

$3x + 4 - 4x + 3 = 4x - 3 - 2x + 1$ ✓

HD

$-x + 7 = 2x - 2$

$-3x = -9$ ✓

$x = 3$ ✓ (4)

[11]

Question 4

4.1 4.1.1 Deposit $= \frac{10}{100} \times \frac{4999}{1}$

$= R\,499,90$ ✓

∴ Loan amt. $= 4999 - 499,90$

$= R\,4499,10$ ✓

$A = P(1 + i.n)$

$A = 4499,10\,(1 + 0,165 \times 2)$ ✓

$= R\,5983,80$ ✓ (4)

4.1.2 Instalments $= \frac{5983,80}{24}$ ✓

$= R\,249,33$ ✓ (2)

4.2 $A_1 = P_1(1+i)^n$

$= 8500(1 + 0,045)^{\frac{21}{4}}$ ✓

$= R\,10\,709,75$ ✓

$A_2 = P_2(1+i)^n$

$= 1500(1 + 0,045)^{\frac{9}{4}}$ ✓

$= R\,1656,16$ ✓

∴ Amount left

$= 10\,709,75 - 1656,16$

$= R\,9053,59$ ✓ (5)

4.3 250g costs $\frac{\$44550}{4} = \$11\,137,50$ ✓ ✓

∴ $11\,137,5 \times 9,97 = R111\,040,88$ ✓ (3)

[14]

Question 5

5.1 5.1.1 $-\frac{9}{4}$ ✓ (1)

5.1.2 $x^2 - \frac{9}{4} = 0$

$x^2 = \frac{9}{4}$ ✓

$x = \pm\sqrt{\frac{9}{4}} = \pm\frac{3}{2}$

∴ $A\left(\frac{3}{2}; 0\right)$ ✓ (2)

5.1.3 $m = \frac{-\frac{3}{2}}{\frac{3}{2}} = -1$

$y = mx + c$

$y = -x + \frac{3}{2}$ ✓ (2)

5.1.4 $x_D = -\frac{5}{2}$

∴ $y = -\left(-\frac{5}{2}\right) + \frac{3}{2}$ ✓

$= \frac{8}{2} = 4$ ✓

$D\left(-\frac{5}{2}; 4\right)$ ✓ (3)

5.1.5 $x = -\frac{5}{2}$ ✓ and $\frac{3}{2}$ ✓ (2)

5.1.6 $-2f(x) = -2\left(x^2 - \frac{9}{4}\right)$

$= -2x^2 + \frac{9}{2}$ ✓ (2)

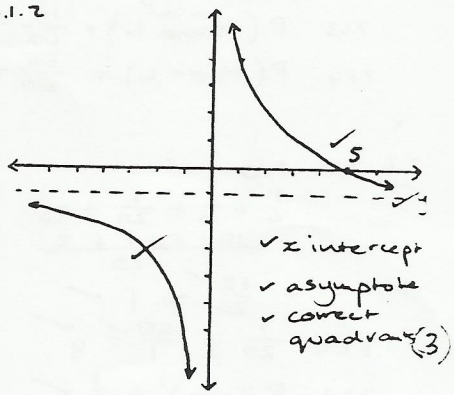
5.1.7 Maximum value ✓ (1)

[13]

Question 6

6.1 6.1.1 $x = 0$ ✓, $y = -1$ ✓ (2)

6.1.2



(3)

6.1.3 Domain: $x \in \mathbb{R}$, $x \neq 0$ ✓ (2)

6.1.4 $k(x) = -\frac{5}{x} - 1$ ✓ (2)

6.2 $y = b^x + q$

$-1 = b^0 + q$ ✓

$-1-1 = q$

$-2 = q$ ✓

$25 = b^3 - 2$ ✓

$27 = b^3$

$\sqrt[3]{27} = b$

$3 = b$ ✓

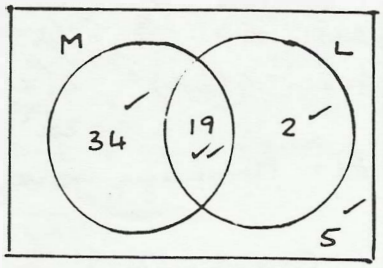
∴ Equation is:

$p(x) = 3^x - 2$ (4)

[13]

Question 7

7.1 7.1.1



(5)

7.1.2 $n(L \text{ only}) = 2$ ✓ (1)

7.1.3 $P(M \text{ and } L) = \frac{19}{60}$ ✓✓ (2)

7.1.4 $P(M \text{ or } L) = \frac{55}{60} = \frac{11}{12}$ ✓✓ (2)

7.2 7.2.1 No. ✓

$\frac{1}{2} + \frac{1}{4} + \frac{1}{20} + \frac{1}{10}$

$= \frac{10+5+1+2}{20}$

$= \frac{18}{20}$ ✓ $\neq 1$ ✓ (3)

7.2.2 $\frac{1}{20} \times \frac{160}{1} = 8$ ✓✓ (2)

7.2.3 $P(\text{(coke)}') = \frac{1}{2}$ ✓ (1)

7.3 c) both complementary and mutually exclusive ✓✓ (2)

18

HD

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Question 1

1.1 $(2x-3)(x^2+2x-3)$

$= 2x^3 + 4x^2 - 6x - 3x^2 - 6x + 9$ ✓✓

$= 2x^3 + x^2 - 12x + 9$ ✓ (3)

1.2 $6x^2 + y - 3x - 2xy$

$= 6x^2 - 3x - 2xy + y$

$= 3x(2x-1) - y(2x-1)$ ✓✓

$= (2x-1)(3x-y)$ ✓

OR $6x^2 - 2xy - 3x + y$

$= 2x(3x-y) - 1(3x-y)$

$= (2x-1)(3x-y)$ (3)

1.3 $\dfrac{12x^2+18xy+27y^2}{2x^2+3xy} \div \dfrac{8x^3-27y^3}{4x^2-9y^2}$

$= \dfrac{12x^2+18xy+27y^2}{2x^2+3xy} \times \dfrac{4x^2-9y^2}{8x^3-27y^3}$ ✓

$= \dfrac{3(4x^2+6xy+9y^2)}{x(2x+3y)} \times \dfrac{(2x-3y)(2x+3y)}{(2x-3y)(4x^2+6xy+9y^2)}$ ✓✓

$= \dfrac{3}{x}$ ✓

(7)

[13]

Question 2

2.1 $\left[\dfrac{(2a)^{-2}}{2a^{-2}}\right]^{-2}$

$= \dfrac{(2a)^4}{2^{-2}a^4}$ ✓

$= \dfrac{2^4 a^4}{2^{-2}a^4}$ ✓

$= 2^{4-(-2)} = 2^6$ ✓

$= 64$ ✓ (4)

2.2 $\dfrac{5^n \cdot 15^{n-1} \cdot 3^n}{25^n \cdot 9^{n-1}}$

$= \dfrac{5^n \cdot (3.5)^{n-1} \cdot 3^n}{(5^2)^n \cdot (3^2)^{n-1}}$

$= \dfrac{5^n \cdot 3^{n-1} \cdot 5^{n-1} \cdot 3^n}{5^{2n} \cdot 3^{2n-2}}$ ✓ ✓

$= 5^{n+n-1-2n} \cdot 3^{n-1+n-(2n-2)}$

$= 5^{-1} \cdot 3^{2n-1-2n+2}$ ✓

$= 5^{-1} \cdot 3^1$ ✓

$= \dfrac{3}{5}$ ✓ (5)

[9]

Question 3

3.1 3.1.1 $x^2 + 3x - 54 = 0$

$(x-6)(x+9) = 0$ ✓

$\therefore x = 6$ or $x = -9$ ✓ (2)

3.1.2 $2 \times 5^{2-x} = 250$

$5^{2-x} = 125$ ✓

$5^{2-x} = 5^3$

$2 - x = 3$ ✓

$x = -1$ ✓ (3)

3.1.3 $\dfrac{x-1}{x-2} + \dfrac{x}{2-x} = \dfrac{3x}{x^2-4}$

$\dfrac{x-1}{x-2} - \dfrac{x}{x-2} = \dfrac{3x}{(x-2)(x+2)}$ ✓

$x(x-2)(x+2)$

$(x-1)(x+2) - x(x+2) = 3x$ ✓

$x^2 + x - 2 - x^2 - 2x = 3x$ ✓

$-4x = 2$ ✓

$x = -\frac{1}{2}$ ✓

(6)

3.2 $x - y = 1$ $\quad 3y + 5x = 21$

$x = 1 + y$ ✓

$\therefore 3y + 5(1+y) = 21$ ✓

$3y + 5 + 5y = 21$ ✓

$8y = 16$

$y = 2$ ✓

$x - y = 1$

$\therefore x - 2 = 1$

$x = 3$ ✓ (5)

[16]

Question 4

4.1 2 ; $\frac{1}{16}$ ✓✓ (2)

4.2 The 8th term ✓✓ (2)

4.3 4.3.1 -1 ; 2 ✓ (1)

4.3.2 $T_n = 3n - 16$ ✓✓ (2)

[7]

Question 5

5.1 $A = P(1 + i.n)$

$A = 75000\,(1 + (0,17 \times 5))$ ✓

$A = R\,138\,750$ ✓

$\therefore$ Monthly instalments $= \frac{138750}{60}$ ✓

$= R\,2312,50$

(3)

5.2 $A_1 = 15000(1 + 0,12)^3$ ✓

$= R\,21073,92$ ✓

$21073,92 - 3000 = R\,18073,92$ ✓

$A_2 = 18073,92\,(1 + 0,12)^2$ ✓

$= R\,22\,671,93$ ✓

OR

$A = 15000(1+0,12)^5 - 3000(1+0,12)^2$ ✓✓✓

$= R\,22\,671,93$ ✓ (5)

[8]

Question 6

6.1 6.1.1 $-x^2 + 9 = 0$

$x^2 - 9 = 0$

$(x-3)(x+3) = 0$

$x = 3$ or -3 ✓

$\therefore A\,(-3;0)$ ✓ (2)

6.1.2 $p = -23$ ✓ (1)

6.1.3 $y = ax^2 - 23$

$-7 = a(4)^2 - 23$ ✓

$16 = 16a$

$1 = a$ ✓ (2)

6.1.4) $-4 \leq x \leq 4$ ✓✓ (2)

6.2 6.2.1 $q = 1$ ✓

$y = k^x + q$

$10 = k^{-2} + 1$ ✓

$9 = k^{-2}$

$\frac{1}{9} = k^2$ ✓

$\frac{1}{3} = k$ ✓

$\therefore$ Eqn: $y = \frac{1}{3}^x + 1$ ✓ (5)

6.2.2 $y = 1 + 1 = 2$ ✓ (1)

6.2.3 $y = 3^{-x} + 1$ (2)

[15]

Question 7

7.1 $y = -3$ ✓

$x = 0$ ✓ (2)

7.2 $\frac{4}{x} - 3 = 0$ ✓

$\frac{4}{x} = 3$

$x = \frac{4}{3}$ ✓ (2)

7.3 $\frac{4}{x} - 3 = x - 3$ ✓

$\frac{4}{x} = x$

$4 = x^2$ ✓

$\pm\sqrt{4} = x$

$\pm 2 = x$ ✓

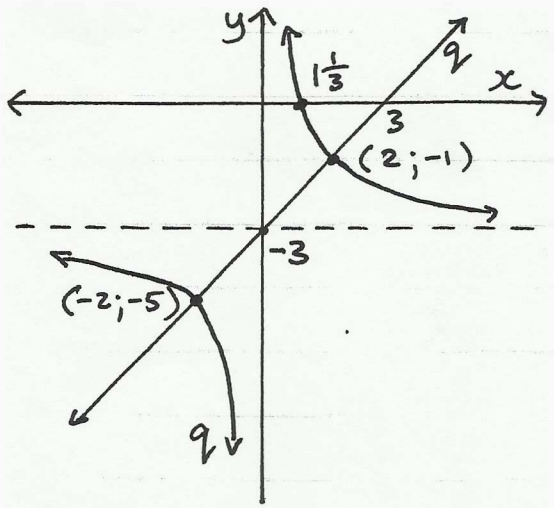
$y = 2 - 3 = -1$ ✓

$y = -2 - 3 = -5$ ✓

∴ Pts. of intersection: (6)

$(2; -1)$ $(-2; -5)$ ✓

7.4



Mark allocation:

Asymptote ✓

Points of intersection ✓

q: x int. ✓ y int. ✓

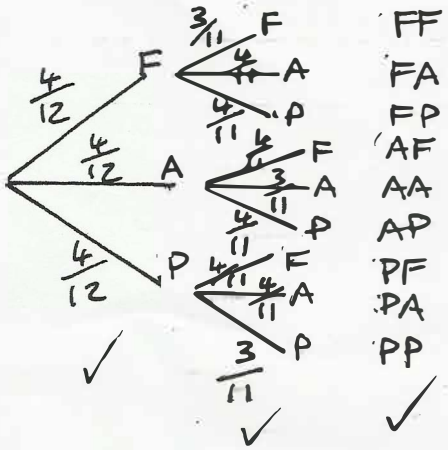
p: x int. ✓

correct quadrants ✓ (6)

[16]

Question 8

8.1 8.1.1



✓ ✓ (3)

8.1.2 $P(FF) + P(AA) + P(PP)$

$= \left(\frac{4}{12} \times \frac{3}{11}\right) + \left(\frac{4}{12} \times \frac{3}{11}\right) + \left(\frac{4}{12} \times \frac{3}{11}\right)$ ✓

$= \frac{1}{11} + \frac{1}{11} + \frac{1}{11}$ ✓

$= \frac{3}{11}$ ✓ (3)

8.2 8.2.1 $43 - x + x + 29 - x + 5 = 65$ ✓

$-x + 77 = 65$

$-x = -12$

$x = 12$ ✓

OR $43 - x + x + 29 - x = 60$

$-x + 72 = 60$

$-x = -12$

$x = 12$ (2)

8.2.2 $n(C \cup R)' = 5$ (1)

8.2.3 $P(R \text{ only}) = \frac{17}{65}$ ✓ ✓ (2)

8.2.4 $P(C \text{ or } R) = \frac{31 + 12 + 17}{65}$

$= \frac{60}{65}$ ✓ $= \frac{12}{13}$ (2)

8.2.5 $P(C) + P(R) - P(C \text{ and } R)$

$= \frac{43}{65} + \frac{29}{65} - \frac{12}{65}$ ✓ ✓ ✓

$= \frac{60}{65}$ ✓ $= \frac{12}{13}$ (3)

[16]

NOTE:
- If a candidate answered a question TWICE, mark only the FIRST attempt.
- If a candidate crossed out an answer and did not redo it, mark the crossed-out answer.
- Consistent accuracy applies to ALL aspects of the marking memorandum.
- Assuming values/answers in order to solve a problem is unacceptable.

LET WEL:
- *As 'n kandidaat 'n vraag TWEE keer beantwoord het, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord deurgehaal en nie oorgedoen het nie, sien die deurgehaalde antwoord na.*
- *Volgehoue akkuraatheid is op ALLE aspekte van die memorandum van toepassing.*
- *Dit is onaanvaarbaar om waardes/antwoorde aan te neem om 'n probleem op te los.*

QUESTION/*VRAAG* 1

1.1.1

$x^4 - 81$
$= (x^2 - 9)(x^2 + 9)$
$= (x - 3)(x + 3)(x^2 + 9)$

✓ $(x^2 - 9)(x^2 + 9)$
✓ $(x - 3)(x + 3)(x^2 + 9)$ (2)

1.1.2

$6x^2y - 10xy + 15x - 25$
$= 2xy(3x - 5) + 5(3x - 5)$
$= (2xy + 5)(3x - 5)$

✓ $2xy(3x - 5)$
✓ $5(3x - 5)$
✓ $(2xy + 5)(3x - 5)$

OR/OF (3)

$6x^2y - 10xy + 15x - 25$
$= 3x(2xy + 5) - 5(2xy + 5)$
$= (2xy + 5)(3x - 5)$

✓ $3x(2xy + 5)$
✓ $-5(2xy + 5)$
✓ $(2xy + 5)(3x - 5)$ (3)

1.2.1

$\frac{3}{a-4} + \frac{2}{a+3} - \frac{21}{a^2 - a - 12}$
$= \frac{3}{a-4} + \frac{2}{a+3} - \frac{21}{(a-4)(a+3)}$
$= \frac{3(a+3) + 2(a-4) - 21}{(a-4)(a+3)}$
$= \frac{3a + 9 + 2a - 8 - 21}{(a-4)(a+3)}$
$= \frac{5a - 20}{(a-4)(a+3)}$
$= \frac{5(a-4)}{(a-4)(a+3)}$
$= \frac{5}{a+3}$

✓ $(a-4)(a+3)$

✓✓ $\frac{3(a+3) + 2(a-4) - 21}{(a-4)(a+3)}$

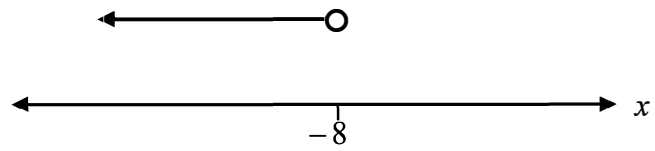
✓ simplification, i.e./ *vereenvoudiging, d.i.* $\frac{5a - 20}{(a-4)(a+3)}$

✓ answer/*antwoord* (5)

1.2.2	$\frac{10^{2x+3}.4^{1-x}}{25^{2+x}}$ $-\frac{(2.5)^{2x+3}.(2^2)^{1-x}}{(5^2)^{2+x}}$ $=\frac{2^{2x+3}.5^{2x+3}.2^{2-2x}}{5^{4+2x}}$ $=2^{2x+3+2-2x}.5^{2x+3-4-2x}$ $=2^5.5^{-1}$ $=\frac{32}{5}$ $=6\frac{2}{5}$	✓ writing bases in terms of prime factors/ *skryf basisse in terme van priemfaktore* ✓ simplification/ *vereenvoudiging* ✓ adding and subtracting indices/*optel en aftrek van eksponente* ✓ $2^5.5^{-1}$ or/*of* $\frac{32}{5}$ or/*of* $6\frac{2}{5}$ (4)
1.3.1	$\sqrt{27}$	✓ answer/*antwoord* (1)
1.3.2	$\sqrt{-27}$	✓ answer/*antwoord* (1) **[16]**

QUESTION/*VRAAG* 2

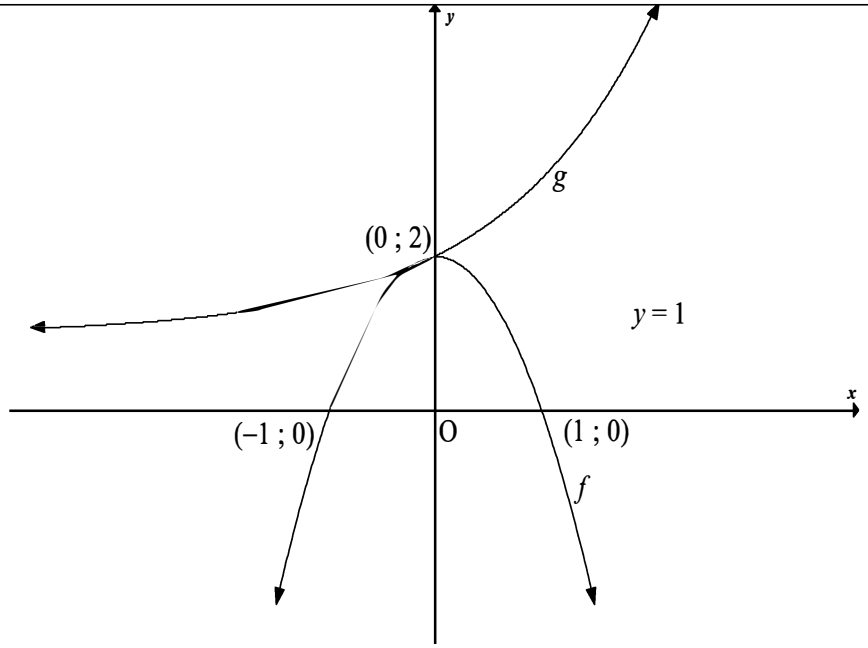
2.1.1	$15x^2-14x-8=0$ $(5x+2)(3x-4)=0$ $5x+2=0$ or $3x-4=0$ $x=-\frac{2}{5}$ or $x=\frac{4}{3}$	✓ standard form/*standaardvorm* ✓ factorisation/*faktorisering* ✓✓ answers/*antwoorde* (4)
2.1.2	$5^x=\frac{1}{125}$ $5^x=\frac{1}{5^3}$ $5^x=5^{-3}$ $x=-3$	✓ 5^{-3} ✓ answer/*antwoord* (2)
2.2.1	$3(x+7)<\frac{x}{2}+1$ $3x+21<\frac{x}{2}+1$ $6x+42<x+2$ $5x<-40$ $x<-8$	✓ $3x+21$ ✓ $6x+42<x+2$ ✓ answer/*antwoord* (3)

2.2.2		✓ indicating numbers to the left of –8 and –8 not included/ *dui getalle links van –8 aan met –8 nie ingesluit* (1)
2.3	Let the amount of money Mary had be R*x/Laat die bedrag geld wat Mary gehad het x wees.* $\frac{1}{5}x = \frac{1}{3}x - 28$ $3x + 420 = 5x$ $2x = 420$ $x = 210$ Mary had R210/*Mary het R210 gehad.*	✓ $\frac{1}{3}x - 28$ ✓ $\frac{1}{5}x$ ✓ equation/*vergelyking* ✓ 210 (4) **[14]**

QUESTION/*VRAAG* 3

3.1.1	–7 ; –12	✓ –7 ✓ –12 (2)
3.1.2	$T_n = -5n + 13$	✓ $-5n$ ✓ 13 (2)
3.1.3	$T_n = -5n + 13$ $T_{30} = -5(30) + 13$ $= -137$	✓ substitution of/*substitusie van* $n = 30$ ✓ answer/*antwoord* (2)
3.1.4	$-5n + 13 = -492$ $-5n = -505$ $n = 101$	✓ $-5n + 13 = -492$ ✓ answer/*antwoord* (2)
3.2.1	$T_n = 2n - 1$	✓ $2n$ ✓ –1 (2)
3.2.2	$T_n = (2n-1)^2$ $= 4n^2 - 4n + 1$	✓ $(2n-1)^2$ (1)
3.2.3	$T_n = (2n-1) - (2n-1)^2$ $= 2n - 1 - (4n^2 - 4n + 1)$ $= 2n - 1 - 4n^2 + 4n - 1$ $= -4n^2 + 6n - 2$	✓ $(2n-1) - (2n-1)^2$ ✓ $2n - 1 - (4n^2 - 4n + 1)$ ✓ $2n - 1 - 4n^2 + 4n - 1$ ✓ answer/*antwoord* (4) **[15]**

QUESTION/*VRAAG* 4

4.1	$y = 1$	✓ answer/*antwoord* (1)
4.2		*f:* ✓ shape of *f/vorm van f* ✓ *x*-intercepts of *f/ x-afsnitte van f* ✓ *y*-intercept (TP) of *f/y-afsnit (DP) van f* *g:* ✓ shape of *g/vorm van g* ✓ asymptote of *g/ asimptoot van g* ✓ *y*-intercept of *g/ y-afsnit van g* (6)
4.3	Range of *f/Waardeversameling van f*: $(-\infty ; 2]$ **OR/OF** Range of *f/Waardeversameling van f*: $y \leq 2$	✓ $(-\infty ; 2]$ (1) ✓ $y \leq 2$ (1)
4.4	Maximum of $3^{f(x)}$ will be obtained when $f(x)$ is at maximum. Max of $f(x)$ is 2 Max of h will be $3^2 = 9$ *Maksimum van* $3^{f(x)}$ *sal verkry word wanneer f(x) by maksimum is.* *Maks van f(x) is 2* *Maks van h sal* $3^2 = 9$ *wees.*	✓ Max of $f(x)$ is 2/ *Maks van f(x) is 2* ✓ Max of $h = 9$/ *Maks van h = 9* (2)
4.5	*f* would have been reflected in the *x*-axis *f sou in die x-as gereflekteer gewees het*	✓ reflected/*gereflekteer* ✓in the *x*-axis/ *in die x-as* (2) **[12]**

QUESTION/*VRAAG* 5

5.1	a = gradient of g $= \frac{-4-4}{-1-3}$ $= 2$ $4 = 2(3) + q$ $q = -2$ $g(x) = 2x - 2$ **OR/OF** a = gradient of g $= \frac{4-(-4)}{3-(-1)}$ $= 2$ $-4 = 2(-1) + q$ $q = -2$ $g(x) = 2x - 2$ **OR/OF** $g(x) = ax + q$ $4 = 3a + q$..... 1 $-4 = -a + q$..... 2 1 – 2: $8 = 4a$ $a = 2$ Substitute in 1/*Substitusie in 1*: $4 = 3(2) + q$ $q = -2$ $g(x) = 2x - 2$	✓ $a = \frac{-4-2}{-1-2}$ ✓substituting/*substitusie* B(3 ; 4) (2) ✓ $a = \frac{4-(-4)}{3-(-1)}$ ✓ substituting/*substitusie* A(–1 ; –4) (2) ✓substituting both points/ *substitusie van beide punte* ✓solving simultaneously/ *los gelyktydig op* (2)
5.2	$\frac{1}{x} - 1 = 2x - 2$ $\frac{1}{x} = 2x - 1$ $1 = 2x^2 - x$ $2x^2 - x - 1 = 0$ $(2x+1)(x-1) = 0$ $x = -\frac{1}{2}$ or $x = 1$	✓ equating/*gelykstelling* ✓ standard form/ *standaardvorm* ✓ factors/*faktore* ✓x-values/*-waardes* (4)

5.3	$-\frac{1}{2} \le x < 0 \quad$ or/*of* $\quad x \ge 1$ **OR/OF** $\left[-\frac{1}{2}\,;\,0\right) \cup [1\,;\,\infty)$	✓ $x \ge -\frac{1}{2}$ ✓ $x < 0$ ✓ $x \ge 1$ (3) ✓ [–0,5 ✓ 0) ✓ [1 ;∞) (3)
5.4	$f(3) = \frac{1}{3} - 1$ $= -\frac{2}{3}$ Length of BE $= 4 - f(3)$ $= 4 - \left(-\frac{2}{3}\right)$ $= 4 + \frac{2}{3}$ $= 4\frac{2}{3}$ **OR/OF** $\text{BE} = 2x - 2 - \frac{1}{x} + 1$ $= \frac{2x^2 - x - 1}{x}$ $(x = 3)\ \text{BE} = \frac{2(3)^2 - (3) - 1}{3}$ $= \frac{18 - 4}{3}$ $= 4\frac{2}{3}$	✓ $\frac{1}{3} - 1$ or $-\frac{2}{3}$ ✓ $4 - f(3)$ ✓ answer/*antwoord* (3) ✓ $2x - 2 - \frac{1}{x} + 1$ ✓ $\frac{2(3)^2 - (3) - 1}{3}$ ✓ answer/*antwoord* (3)
5.5	$h(x) = f(x) + 3$ $h(x) = \frac{1}{x} + 2$	✓ answer/*antwoord* (1) **[13]**

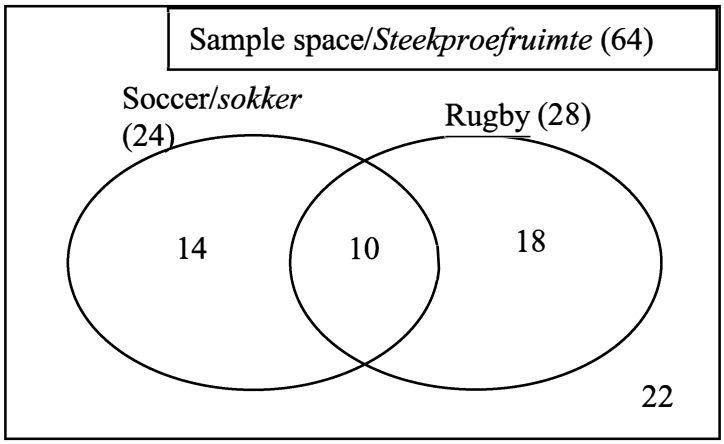
QUESTION/*VRAAG* 6

6.1	$d-5+d-1=0$ $2d=6$ $d=3$	✓ $d-5+d-1=0$ ✓ $d=3$ (2)
6.2	$y=a(x-2)(x+2)$ $-9=a(1-2)(1+2)$ $-9=a(-1)(3)$ $-3a=-9$ $a=3$ $f(x)=3(x^2-4)$ $=3x^2-12$ $c=-12$	✓ $y=a(x-2)(x+2)$ ✓ subs (1 ; –9) ✓ $a=3$ ✓ $c=-12$ (4) **[6]**

QUESTION/*VRAAG* 7

7.1	$\frac{\text{R}5000}{9{,}518569 \text{ rands per dollar}} = \$525{,}29$ **OR/OF** $\text{R}5000 \times 0{,}105058 \text{ dollars per rand} = \$525{,}29$	✓ selects/*kies* 9,515869 ✓ answer/*antwoord* (2) ✓ selects/*kies* 0,105058 ✓ answer/*antwoord* (2)
7.2.1	$A=P(1+i)^n$ $=5000(1+0{,}061)^3$ $=\text{R}5\ 971{,}95$	✓ formula/*formule* ✓ $5000(1+0{,}061)^3$ ✓ R5 971,95 (3)
7.2.2	Let the amount that Zach invests each year be *x/Laat die bedrag wat Zach elke jaar belê, x wees.* $x(1+0{,}09)^2+x(1+0{,}09)^1=5980$ $x[1{,}09^2+1{,}09]=5980$ $x=\frac{5980}{1{,}09^2+1{,}09}$ $=\text{R}2\ 624{,}99$ **OR/OF** Let the amount that Zach invests each year be *x/Laat die bedrag wat Zach elke jaar belê, x wees.* $[x(1+0{,}09)^1+x](1+0{,}09)^1=5980$ $x(2{,}09)(1{,}09)=5980$ $x=\frac{5980}{(2{,}09)(1{,}09)}$ $=\text{R}2\ 624{,}99$	✓ $x(1+0{,}09)^2$ ✓ $x(1+0{,}09)^1$ ✓ x as common factor/ *as gemeenskaplike faktor* ✓ answer/*antwoord* (4) ✓ $x(1+0{,}09)^1$ ✓ $[x(1+0{,}09)^1+x]$ ✓ x as common factor/ *as gemeenskaplike faktor* ✓ answer/*antwoord* (4) **[9]**

QUESTION/*VRAAG* 8

8.1.1		✓diagram shape/ *diagramvorm* ✓14 in correct position/ *in korrekte posisie* ✓10 in correct position/ *in korrekte posisie* ✓18 in correct position/ *in korrekte posisie* ✓22 in correct position/ *in korrekte posisie* (5)
8.1.2 (a)	$P(\text{Soccer and Rugby}) = \frac{10}{64} = \frac{5}{32} = 0,15625 = 15,63\%$	✓answer (in any form)/ *antwoord (in enige vorm)* (1)
8.1.2 (b)	$P(\text{Soccer or Rugby}) = \frac{14+10+18}{64} = \frac{42}{64} = \frac{21}{32} = 0,65625 = 65,63\%$ **OR / OF** $P(\text{Soccer or Rugby}) = 1 - \frac{22}{64} = \frac{21}{32}$	✓answer (in any form)/ *antwoord (in enige vorm)* (1)
8.1.3	No/*Nee*. Some boys play both soccer and rugby/*Party seuns speel sokker en rugby*. **OR/OF** No/*Nee* P(S and R) $\neq 0$ / P(S *en* R) $\neq 0$	✓ No/*Nee* ✓ Reason/*Rede* (2) ✓ No/*Nee* ✓ Reason/*Rede* (2)
8.2	P(more than 2 passengers per car) / $P(\text{meer as 2 passasiers per kar})$ $= \frac{5+1}{7+11+6+5+1}$ $= \frac{6}{30}$ $= \frac{1}{5} = 0,2 = 20\%$	✓ numerator/*teller* 6 ✓ denominator/ *noemer* 30 ✓ answer/*antwoord* (accept/*aanvaar* $\frac{6}{30}$ or $\frac{1}{5}$ or/*of* 0,2 or/*of* 20%) (3)
8.3	P(not getting a six) / $P(\text{nie 'n ses kry nie})$ $= 1 - \left(\frac{10}{36} + \frac{1}{36}\right)$ $= \frac{25}{36}$	✓$\left(\frac{10}{36} + \frac{1}{36}\right)$ ✓$1 - \left(\frac{10}{36} + \frac{1}{36}\right)$ ✓$\frac{25}{36}$ (3) **[15]**

TOTAL/*TOTAAL*: 100

NOTE:
- If a candidate answered a question TWICE, mark only the FIRST attempt.
- If a candidate crossed out an answer and did not redo it, mark the crossed-out answer.
- Consistent accuracy applies to ALL aspects of the marking memorandum.
- Assuming values/answers in order to solve a problem is unacceptable.

LET WEL:
- *As 'n kandidaat 'n vraag TWEE keer beantwoord het, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord deurgehaal en nie oorgedoen het nie, sien die deurgehaaldeantwoord na.*
- *Volgehoue akkuraatheid is op ALLE aspekte van die memorandum van toepassing.*
- *Dit is onaanvaarbaar om waardes/antwoorde te veronderstel om 'n probleem op te los.*

QUESTION 1/*VRAAG* 1		
1.1.1	$x^2 - x$ $= x(x-1)$	✓ answer/*antwoord* (1)
1.1.2	$3x^2 + 3px - 2mx - 2mp$ $= 3x(x+p) - 2m(x+p)$ $= (3x-2m)(x+p)$ **OR/*OF*** $3x^2 - 2mx + 3px - 2mp$ $= x(3x-2m) + p(3x-2m)$ $= (3x-2m)(x+p)$	✓ $3x(x+p)$ ✓ $-2m(x+p)$ ✓ answer/*antwoord* (3) ✓ $x(3x-2m)$ ✓ $p(3x-2m)$ ✓ answer/*antwoord* (3)
1.1.3	$2p^2 - 2p - 12$ $= 2(p^2 - p - 6)$ $= 2(p-3)(p+2)$ **OR/*OF*** $2p^2 - 2p - 12$ $= (2p-6)(p+2)$ $= 2(p-3)(p+2)$	✓ taking out com. fact correctly/*korrek gem. faktors* ✓✓ answer/*antwoord* (3) ✓✓ factors/*gem. faktors* ✓answer/*antwoord* (3) CA apply for maximum of 2 marks DA-*maksimum van 2 punte* Answer ONLY full marks *Antwoord ALLEENLIK-vol punte*

M.S

1.2.1	$\frac{2^{a+1}-2^{a-1}}{2^a}$ $=\frac{2^a(2-2^{-1})}{2^a}$ $=2-\frac{1}{2}$ $=\frac{3}{2}$	✓ com. fact/*gem. fak* ✓$(2-2^{-1})$ ✓ answer/*antwoord* (3)
1.2.2	$\frac{x^3-x+1}{x^3+1}\div\frac{2x}{2x+2}$ $=\frac{x^2-x+1}{(x+1)(x^2-x+1)}\times\frac{2(x+1)}{2x}$ $=\frac{1}{x}$	✓ fact.of cube/*fak van vierkant* ✓ invert and multiply /*inv. en maal* ✓ factorise/ *fak.* $2(x+1)$ ✓answer/*antwoord* (4) [14]

M.S

QUESTION 2/*VRAAG 2*		
2.1.1	$x(x-1)=20$ $x^2-x-20=0$ $(x-5)(x+4)=0$ $x=5$ or/of $x=-4$	✓removing brackets/*verw.hakkies* ✓stand.form/*stand. vorm* ✓fact/*fak* ✓answer/*antwoord* (4)
2.1.2	$\frac{3x-2}{2}=(x+1)$ $3x-2=2(x+1)$ $3x-2=2x+2$ $x=4$ **OR/*OF*** $\frac{3x-2}{2}-(x+1)=0$ $\frac{3x-2-2(x+1)}{2}=0$ $\frac{3x-2-2x-2}{2}=0$ $\frac{x-4}{2}=0$ $x=4$ **OR/*OF*** $\frac{3x}{2}-1=x+1$ $\frac{3x}{2}-x=2$ $\frac{x}{2}=2$ $x=4$	✓ multipl./*maal* ✓ simpl/*simp.* ✓answer/*ant*woord (3) ✓ writing the LHS as a single fraction./ *skryf LK as n enkel breuk* ✓simplification/ *simpl.* ✓answer/*antwoord* (3)

M.S

2.2.1	$-4 \le -\frac{1}{2}m < 5$ $-8 \le -m < 10$ $8 \ge m > -10$ $-10 < m \le 8$ **OR/*OF*** $-4 \le -\frac{1}{2}m$ and / *en* $-\frac{1}{2}m < 5$ $-8 \le -m$ and /en $-m < 10$ $-10 < m \le 8$	✓ multipl/*maal* by 2 ✓ critical values/*krit. waarde* ✓ corr.notat/*korr. not.* (3) ✓ multipl/*maal* by 2 ✓ m – values/*waardes* ✓ corr notat./*korr. not* (3)
2.2.2	$(-10 ; 8]$	✓ ans/*ant* (1)
2.3.1	Given/*Gegee* $4x^2 - y^2 = 171$ $2x - y = 9$ $(2x - y)(2x + y) = 171$ $9(2x + y) = 171$ $2x + y = 19$	✓ factors/*fak* ✓ answer/*ant* (2)
2.3.2	$2x - y = 9$ $2x + y = 19$ $4x = 28$ $x = 7$ $y = 5$ **OR/*OF*** $2x - y = 9$ $y = 2x - 9$ $2x + y = 19$ $2x - (2x - 9) = 19$ $4x = 28$ $x = 7$ $y = 5$	✓ method/*methode* ✓ x -value/*waarde* ✓ y – value/*waarde* (3) ✓ method/*methode* ✓ x -value/*waarde* ✓ y – value/*waarde* (3) **[16]**

M.S

QUESTION 3/*VRAAG* 3		
3.1	9	✓ans/*ant* (1)
3.2	25	✓ ans/*ant* (1)
3.3	$D_n = 2n-1$	✓2n ✓–2 (2)
3.4	$L_n = (n-1)^2$	✓✓ans/*ant* (2)
3.5	$L_n = (n-1)^2$ $(n-1)^2 = 64$ $n^2 - 2n + 1 = 64$ $n^2 - 2n - 63 = 0$ $(n-9)(n+7) = 0$ $n = 9$ or/ of $n = -7$ n/a	✓equating/ *vergelyk* $L_n = 64$ ✓factors/*faktore* ✓answer/*antwoord* (3)
3.6	Number of dark tiles/*Getal donker teëls* = 1 + 3 + 5 + ...+99+101+...+ 195+197+ 199 = 50(200)=10 000 Total area covered/*Totale oppervlakte gedek* $= 10\,000(0{,}3 \times 0{,}6)$ $= 1800\ m^2$	✓✓10 000 dark tiles/*donker teëls* ✓ans/*ant* (3) **[12]**

M.S

QUESTION 4/*VRAAG* 4		
4.1.1	The cash deposit/*Kontantdeposito* $= 0{,}15 \times R15550$ $= R\,2332{,}50$ The value of loan/*Waarde van lening* $= R15550 - R2332{,}50$ $= R13217{,}50$ **OR/ *OF*** The value of loan/*Waarde van lening* = 85% of 15550 $= R13217{,}50$	✓deposit/*deposito* ✓ans/*ant* (2) ✓85% of loan/*85% van lening* ✓ans/*ant* (2)
4.1.2	$A = P(1 + i.n)$ $= 13217{,}50\left(1 + 0{,}1625 \times \frac{54}{12}\right)$ $= R\,22\,882{,}80$ **OR/ *OF*** $SI = Pi.n$ $= 13217{,}50(0{,}1625)(4{,}5)$ $= R9665{,}30$ $A = SI + P$ $= R9665{,}30 + R13217{,}50$ $= R\,22\,882{,}80$	✓ $A = P(1+i.n)$ ✓ correct sub into correct formula/*vervang in korrek formule.* ✓ans/*ant* (3) ✓ $SI = R9665{,}30$ ✓ $A = Pin + P$ ✓ans/*ant* (3)
4.1.3	Annual Insurance premium/*Per jaar versekeringspremie* $= 0{,}015 \times 15\,550$ $= R\,233{,}25$ per annum/per jaar Monthly payments/ Maandelikse paaiement $= \frac{22882{,}80}{54} + \frac{233{,}25}{12}$ $= R\,443{,}19$ **OR/ *OF*** $AIP = 233{,}25 \times 4{,}5$ $= R1049{,}63$ Monthly payments/ Maandelikse paaiement $= \frac{22882{,}80 + 1049{,}63}{54}$ $= R\,443{,}19$	✓ instalment per Month/*paaiement per maand* ✓ insurance per month/*versekering per maand* ✓ans/*ant* (3) ✓ insurance for/*versekering vir* 4,5 years/ *jaar* ✓ Instalment per month */paaiement per maand* ✓ans/*ant* (3)

4.2.1	\$1 = R 13,45 \$$x$=R4 800 $\$x = \frac{4800}{13,45}$ = \$356,88	✓ division by/ *deel deur* 13,45 ✓answer/ *antwoord* (2)
4.2.2	\$1=R 13,45 \$85=R 1143,25 1£=21,41 £x=R1143,25 $x£ = \frac{1143.25}{21,41}$ = £ 53,40 **OR/ *OF*** $x£ = \frac{13,45}{21,41} \times 85$ = £ 53,40 **OR/ *OF*** $x£ = \frac{21,41}{13,45} \times 85$ = £ 53,40	✓1143.25 ✓ 1£ = 21,41 ✓ans/*ant* (3) ✓ $\frac{13,45}{21,41}$✓ ×85 ✓ans/*ant* (3) ✓ $\frac{21,41}{13,45}$✓ ×85 ✓ans/*ant* (3)
4.3	$A = P(1+i)^n$ $2P = P(1+i)^5$ $2 = (1+i)^5$ $\sqrt[5]{2} = 1+i$ $i = \sqrt[5]{2} - 1$ $i = 0,148698 \times 100$ r = 14,87% p.a/per jaar	✓ $2P = P(1+i)^5$ ✓ $\sqrt[5]{2} = 1+i$ ✓ r = 14,87% p.a /*pj* (3) **[16]**

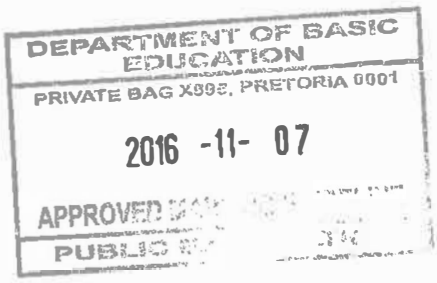
M.S

QUESTION 5/ *VRAAG 5*		
5.1	C(0 ; –4)	✓ ans/*ant* (1)
5.2	D(0 ; 2)	✓ ans/*ant* (1)
5.3	CD = 2 – (–4) CD = 6 units/*eenhede*	✓ ans/*ant* (1)
5.4	$x^2 - 4 = 0$ $(x-2)(x+2)=0$ $x=2 \quad x=-2$ B(–2 ; 0)	✓ $y=0$ ✓ factors/*faktore* ✓ ans/*ant* (3)
5.5	$x^2 - 4 = -x + 2$ $x^2 + x - 6 = 0$ $(x-2)(x+3)=0$ $x=2 \quad x=-3$ E(–3 ; 5)	✓ $f(x)=g(x)$: equating/*vergelyk* ✓ factors/*faktore* ✓ x-answer/*antwoord* ✓ y-answer/*antwoord* (4)
5.6.1	$-3 < x < 2$ **OR/*OF*** $(-3 ; 2)$	✓ values/*waardes* ✓ notation/*notasie* (2)
5.6.2	$x \leq -2$ or $x = 2$ **OR/ *OF*** $(-\infty ; -2] \cup \{2\}$	✓ $x \leq -2$ ✓ 2 ✓ $(-\infty ; -2]$ ✓ 2 (2)
5.7	K(–2 ; 4) BK = 4 units/*eenhede* AB = 4 units/*eenhede* AK = $\sqrt{4^2 + 4^2}$ (Pythagoras) = 5,66 or $\sqrt{32}$ or $4\sqrt{2}$ units/*eenhede*	✓ BK ✓ AB ✓ method/*methode* ✓ answer/*antwoord* (4)
		[18]

M.S

QUESTION 6/*VRAAG* 6		
6.1	$y < 8$	✓ answer/*antwoord* (1)
6.2	$-2^x + 8 = 0$ $2^x = 8$ $2^x = 2^3$ $x = 3$ B(3 ; 0)	✓ equating to 0/*vergelyk met 0* ✓ simpli/*vereenv.* ✓*x*-answer/*antwoord* (3)
6.3	$h(x) = 2^x - 8$	✓✓ answer/*antwoord* (2)
6.4	Reflecting the graph of g over the x-axis only changes the sign of the y-values. This means that both g and h will have the same x-intercept at B. *Grafiek g oor die x-as gereflekteer om h te vorm. As y = 0, sal die oplossing dieselfde wees vir albei funksies.Beide g en h sal n x-afsnit by B hê.*	✓ reflection over x-axis/*reflek oor x-as* ✓ explanation/*verduideliking* (2) **[8]**

QUESTION 7/*VRAAG* 7		
	$h(x) = \frac{a}{x} + 3$ $0 = \frac{a}{2} + 3$ $a = -6$ $h(x) = \frac{-6}{x} + 3$	✓ +3 ✓ subst. of/ *sub van (2 ; 0)* ✓ value of *a/ waarde van a* ✓ answer/*antwoord* (4) **[4]**



M.S

QUESTION 8/*VRAAG* 8		
8.1.1	$27-x+x+32-x+7=42$ $-x=42-66$ $x=24$	✓equation/*vergelyking* ✓answer/*antwoord* (2)
8.1.2 (a)	P(does not play hockey or soccer/*speel nie hokkie of sokker)* $=\frac{7}{42}$ **OR/ *OF*** $=\frac{1}{6}$	✓answer/*antwoord* (1)
8.1.2 (b)	P(soccer only/*slegs sokker*) $=\frac{8}{42}$ OR $=\frac{4}{21}$ **OR/*OF*** P(soccer only/*slegs* ***sokker***) $=1-\left(\frac{3+24+7}{42}\right)$ $=\frac{8}{42}$ $=\frac{4}{21}$	✓✓answer/*antwoord* (2) ✓✓answer/*antwoord* (2)
8.2.1	$x+3$	✓answer/*antwoord* (1)
8.2.2	$P(\text{blue/blou})=\frac{3}{x+3}$	✓✓ answer/*antwoord* (2)
8.3.1	P(A and/*en* B) = 0	✓ answer/*antwoord* (1)
8.3.2	$P(B)=1-P(B')$ $=1-0,7$ $=0,3$ $P(A \text{ or/of } B)=P(A)+P(B)$ $=0,55+0,3$ $=0,85$	✓ $P(B)=0.3$ ✓subst./*vervang* ✓answer/*antwoord* M.S (3) **[12]**

TOTAL/*TOTAAL*: 100

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TO: HEADS OF EXAMINATION SECTIONS
HEADS OF CURRICULUM SECTIONS

EXAMINATION INSTRUCTION NO 30 OF 2016

AMENDMENTS TO THE MARKING GUIDELINE OF THE 2016 COMMON EXAMINATION FOR GRADE 10: MATHEMATICS P1

Eastern Cape Province

Exclusion of Question 3 from the English and Afrikaans versions of the question paper

1. A printing error occurred in the Eastern Cape Province in Question 3. This resulted in all four blocks of Pattern 2 / Patroon 2 on both the English and Afrikaans papers being shaded. Only 3 blocks should have been shaded in this pattern/patroon.

2. As a result this question which counts for 12 marks must be excluded and is not to be marked.

3. Consequently the total marks for the question paper must be reduced to 88 marks, then scaled up to 100 marks.

4. Refer to **Annexure A** that provides the conversion table that must be used to calculate the learner's total marks.

5. For further information please contact the Director: Examinations and Assessment, Ms P Ogunbanjo at 012 357 3909 or email: Ogunbanjo.p@dbe.gov.za

DR RR POLIAH
CHIEF DIRECTOR: NATIONAL ASSESSMENT AND PUBLIC EXAMINATIOS
DATE: 7-11-16.

NOTE:
- If a candidate answered a question TWICE, mark only the FIRST attempt.
- If a candidate crossed out an answer and did not redo it, mark the crossed-out answer.
- Consistent accuracy applies to ALL aspects of the marking guidelines.
- Assuming values/answers in order to solve a problem is unacceptable.

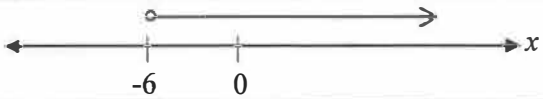
LET WEL:
- *As 'n kandidaat 'n vraag TWEE keer beantwoord het, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord deurgehaal en nie oorgedoen het nie, sien die deurgehaalde antwoord na.*
- *Volgehoue akkuraatheid is op ALLE aspekte van die nasienriglyne van toepassing.*
- *Dit is onaanvaarbaar dat waardes/antwoorde veronderstel word om 'n probleem op te los.*

QUESTION/*VRAAG* 1

1.1.1	$q = \sqrt{b^2 - 4ac}$ $q = \sqrt{(-1)^2 - 4(2 \times -4)}$ $q = \sqrt{33}$	✓correct subst./*korrek verv.* ✓answ/*antw* (2)
1.1.2	Irrational/*Irrasionaal*	✓answ/*antw* (1)
1.1.3	5 and/*en* 6	✓answ/*antw* (1)
1.2.1	$t^2(r-s)-r+s$ $=t^2(r-s)-(r-s)$ $=(r-s)(t^2-1)$ $=(r-s)(t-1)(t+1)$	✓common factor/*gemene faktor* ✓factors/*faktore* ✓difference of two squares/ *verskil van twee kwadrate* (3)
1.2.2	$\frac{x^3+1}{x^2-x+1}$ $=\frac{(x+1)(x^2-x+1)}{x^2-x+1}$ $=x+1$	factors of numerator: ✓$(x+1)$ ✓(x^2-x+1) (2)

1.3.1	$(2y+3)(7y^2-6y-8)$ $=14y^3-12y^2-16y+21y^2-18y-24$ $=14y^3+9y^2-34y-24$	✓multiplying brackets/*vermenigvuldig hakkies* ✓answ/*antw* (2)
1.3.2	$\frac{3}{x^2-9}+\frac{2}{(x-3)^2}$ $=\frac{3}{(x-3)(x+3)}+\frac{2}{(x-3)^2}$ $=\frac{3(x-3)+2(x+3)}{(x-3)^2(x+3)}$ $=\frac{3x-9+2x+6}{(x-3)^2(x+3)}$ $=\frac{5x-3}{(x-3)^2(x+3)}$	✓LCD/*KGN* ✓$3(x-3)+2(x+3)$ ✓answ/*antw* (3)
1.3.3	$\frac{3^t-3^{t-2}}{2.3^t-3^t}$ $=\frac{3^t(1-3^{-2})}{3^t(2-1)}$ $=\frac{1-\frac{1}{9}}{1}$ $=\frac{8}{9}$	✓factors/*faktore* ✓ simpl./*vereenv* ✓answ/*antw* (3)
		[17]

QUESTION/*VRAAG* 2

2.1.1	$4-2x<16$ $-2x<12$ $x>-6$ **OR / *OF*** $4-2x<16$ $-12<2x$ $-6<x$	✓ simpl./*vereenv* ✓answ/*antw* (2)
2.1.2		✓ answ/*antw* (1)
2.2	$3x-4y=-4$.....(1) $-2x-y=10$.....(2) $3x-4y=-4$.....(1) $(2)\times -4: 8x+4y=-40$.....(3) $(1)+(3): 11x=-44$ $x=-4$ substitute $x=-4$ into (2) $-2(-4)-y=10$ $y=-2$	✓multipl/*maal* (2) by/*met* 4 ✓adding/*tel op* (1) & (3) ✓*x*-value/*waarde* ✓*y*-value/*waarde* (4)
	OR/*OF* $3x-4y=-4$.....(1) $-2x-y=10$.....(2) $(1)\times 2: 6x-8y=-8$..,.....(3) $(2)\times 3: -6x-3y=30$.....(4) $(3)+(4): -11y=22$ $y=-2$ substitute $y=-4$ into (2) $-2x-(-2)=10$ $2x=-8$ $x=-4$	**OR/*OF*** ✓multipl/*maal* (1) by/*met* 2 and multipl/*maal* (2) by/*met* 3 ✓adding/*tel op* (3) & (4) ✓*y*-value/*waarde* ✓*x*-value/*waarde* (4)
	OR/*OF* From(2): $y=-2x-10$.....(3) subst.(3) into (1): $3x-4(-2x-10)=-4$ $3x+8x+40=-4$ $11x=-44$ $x=-4$ subst.$x=-4$ into (3): $y=-2(-4)-10$ $y=-2$	**OR/*OF*** ✓ equation/*verg* (3) ✓ subst./*verv.* ✓*x*-value/*waarde* ✓*y*-value/*waarde* (4)

2.3.1	$\frac{x(x-5)}{6}-1=0$ $x^2-5x-6=0$ $(x-6)(x+1)=0$ $x=6$ or $x=-1$ **OR/*OF*** $\frac{x(x-5)}{6}-1=0$ $\frac{x^2-5x-6}{6}=0$ $\frac{(x-6)(x+1)}{6}=0$ $x-6=0$ or $x+1=0$ $x=6$ or $x=-1$	✓stand. form/*-vorm* ✓factors/*faktore* ✓ answ/*antw* (3) **OR/*OF*** ✓stand. form/*-vorm* ✓factors/*faktore* ✓ answ/*antw* (3)
2.3.2	$c=\sqrt{a+2x}$ $c^2=a+2x$ $2x=c^2-a$ $x=\frac{c^2-a}{2}$	✓squaring both sides/*kwadreer beide kante* ✓ answ/*antw* (2)
2.4	Let Linda's age now be *x/Laat Linda se ouderdom nou x wees* Therefore Tabelo's age is 4*x*/*Dus is Tabelo se ouderdom 4x* 6 years/*jaar* later: Linda's age will be:/ *Linda se ouderdom sal wees:* $x+6$ Tabelo's age will be:/ *Tabelo se ouderdom sal wees:*$4x+6$ $4x+6=3(x+6)$ $4x-3x=18-6$ $x=12$ Linda's age/*Linda se ouderdom*is 12 years/*jaar*	✓$4x$ ✓$x+6$ ✓equating/*verg.* ✓ answ/*antw* (4)
		[16]

QUESTION/*VRAAG* 3

3.1.1	constant difference = 3 $b = 14$	✓ constant diff/*konstante verskil* = 3 ✓ answ/*antw* (2)
3.1.2	The sequence is linear/*Hierdie ry is lineêr*: $T_n = pn + q$. $T_n = 3n + q$ $T_n = 3n + 2$	✓3n ✓2 (2)
3.1.3	$T_n = 3n + 2$ $T_{15} = 3(15) + 2$ $T_{15} = 47$	✓ subst./*verv.* ✓ answ/*antw* (2)
3.1.4	$T_n = 3n + 2$ $83 = 3n + 2$ $3n = 81$ $n = 27$	✓ $T_n = 83$ ✓ answ/*antw* (2)
3.2.1	Sum of the terms in rows/*Som van terme in ry*: 2 ; 16 ; 54 ; 128 ;……. Row/*Ry* 1: 2 x 1= 2 Row/*Ry* 2 : 2 x 8 = 16 Row/*Ry* 3 : 2 x 27 = 54 Row/*Ry* 4 : 2 x 64 = 128 . . Row/*Ry n* : $2n^3$ Row/*Ry* 8 = $2(8)^3 = 1024$ **OR/*OF*** Pattern for the first terms in rows/*Patroon van die eerste terme in rye*: 2; 6; 14 ; 26 ; … 2 ; 4(1)+2 ; 4(1)+4(2)+2 ; 4(1)+4(2)+4(3)+2 ; …. $T_8 = 4(1+2+3+4+5+6+7)+2$ $= 114$ Sum of the terms in row 8/*Som van terme in ry 8* $= 114+118+122+136+130+134+138+142$ $= 1024$	✓gen./*alg.* term ✓ subst./*verv.* ✓ answ/*antw* (3) **OR/*OF*** ✓ $T_8 = 114$ ✓sum of terms in row/*som van terme in ry* 8 ✓ answ/*antw* (3)

3.2.2	Mean in row/*Gemiddeld in ry* 20 $= \frac{2(20)^3}{20} = 800$ **OR/*OF*** First term of row/*Eerste term in ry* 20: $T_{20} = 4(1+2+3+4+....+19)+2$ $= 762$ Sum of terms in row/*Som van terme in ry* 20 $= 762+766+770+...+838.$ $= 16000$ $\therefore$ Mean/*Gemiddeld* $= \frac{16000}{20} = 800$	✓ subst./*verv.* ✓ answ/*antw* (2) **OR/*OF*** ✓16 000 ✓ answ/*antw* (2)
		[13]

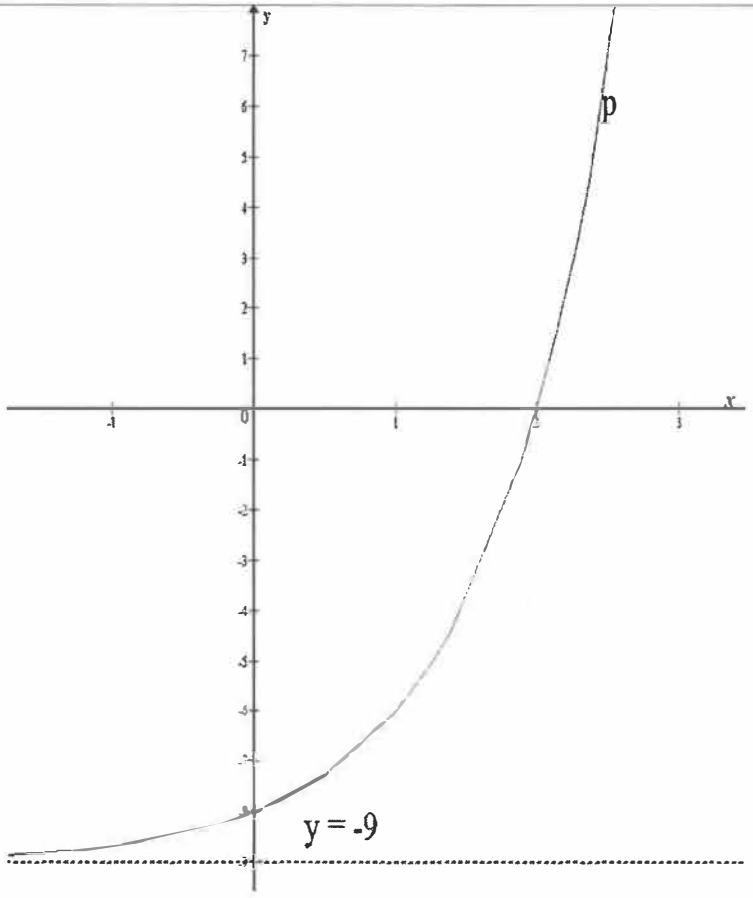
QUESTION/*VRAAG* 4

4.1.1	$A = P(1+i.n)$ $= 18000(1+0,045\times 7)$ $= R23670$ Interest/*Rente* $= 23670-18000$ $= R5670$ **OR/*OF*** $SI = \frac{Prt}{100}$ $= \frac{18000\times 4,5\times 7}{100}$ $= R5670,00$	✓ R23 670 ✓R5 670 (2) **OR/*OF*** ✓ subst./*verv.* ✓ answ/*antw* (2)
4.1.2	$A = P(1+i)^n$ $R27660 = P(1+0,067)^5$ $P = \frac{27660}{(1+0,067)^5}$ $P = R20000$	✓ correct subst./*korrek verv.* in correct formula/ *korrekte formule* ✓ making P the subject/*maak P onderwerp van foemule* ✓ answ/*antw* (3)
4.1.3	$A = P(1+i.n)$ $27660 = 18000(1+i\times 7)$ $7i = \frac{27660}{18000}-1$ $i = \frac{\frac{27660}{18000}-1}{7}$ $i = 0,07666....$ Simple interest rate should have been/ *Eenvoudige rente moes wees* 7,67%	✓ correct subst./*korrek verv.* in correct formula/in *korrekte formule* ✓ making *i* the subject/*maak i onderwerp van formule* ✓ answ/*antw* as % (3)
4.2	$\frac{\text{Pound/}Pond}{\text{Dollar}} = \frac{R16,52}{R12,91}$ $\therefore £1 \approx \$1,28$ **OR/*OF*** $\frac{\text{Dollar}}{\text{Pound/}Pond} = \frac{R12,91}{R16,52}$ $\therefore$	✓proportion/*verhouding* ✓ $£1 \approx \$1,28$ (2) **OR/*OF*** ✓proportion/*verhouding* ✓ $\$1 \approx £0,78$ (2)
		[10]

QUESTION/*VRAAG* 5

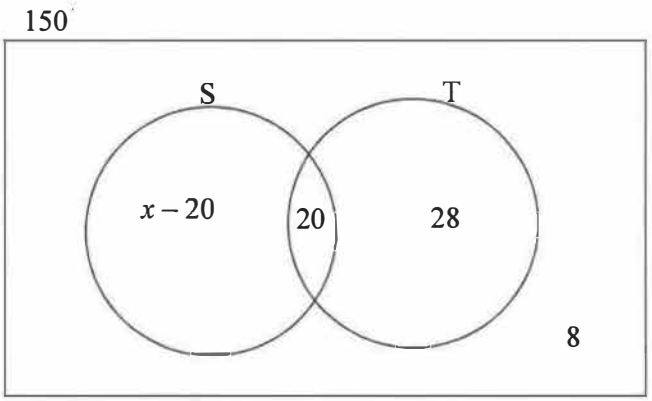
5.1	Range of/*Waardeversameling van* g : $y \leq 8$ **OR/*OF*** $y \in (-\infty; 8]$	✓ answ/*antw* (1) **OR/*OF*** ✓ answ/*antw* (1)
5.2	The x-coordinate of R is -2	✓ answ/*antw* (1)
5.3	$g(x) = ax^2 + 8 \Rightarrow q = 8$ $g(2) = a(2)^2 + 8 = 0$ $\Rightarrow a = -2$ **OR/*OF*** $g(x) = ax^2 + 8 \Rightarrow q = 8$ $g(-2) = a(-2)^2 + 8 = 0$ $\Rightarrow a = -2$	✓$q = 8$ ✓ subst./*verv.* (2 ; 0) ✓$a = -2$ (3) **OR/*OF*** ✓$q = 8$ ✓ subst./*verv.* (–2 ; 0) ✓$a = -2$ (3)
5.4	$f(x) = mx + c \Rightarrow c = 8$ $f(-2) = -2m + 8 = 0$ $\Rightarrow m = 4$ $f(x) = 4x + 8$	✓$c = 8$ ✓$m = 4$ ✓equation / *vergelyking* (3)
5.5.1	$x = -2$ or $x = 0$	✓$x = -2$ ✓ $x = 0$ (2)
5.5.2	$x \,.\, g(x) \leq 0$ $-2 \leq x \leq 0$ or $x \geq 2$ **OR/*OF*** $x \in [-2; 0]$ or $x \in [2; \infty)$	✓✓$-2 \leq x \leq 0$ ✓$x \geq 2$ (3) **OR/*OF*** ✓✓ $[-2; 0]$ ✓ $[2; \infty)$ (3)
5.6	$h(x) = -(-2x^2 + 8)$ $h(x) = 2x^2 - 8$	✓ $h(x) = -(g(x))$ ✓$2x^2 - 8$ (2)
		[15]

QUESTION/*VRAAG* 6

6.1.1	The range/*Waardeversameling* $y > -9$ **OR/*OF*** $y \in (-9; \infty)$	✓ answ/*antw* (1) **OR/*OF*** ✓ answ/*antw* (1)
6.1.2	$p(x) = k^x + q$ $p(x) = k^x - 9$ $0 = k^2 - 9$ $k^2 = 9$ $k = \pm 3$ $k = 3$ since/omdat $k > 0$ $p(x) = 3^x - 9$	✓$q = -9$ ✓subst/*verv.* (2 ; 0) ✓$k = 3$ (3)
6.1.3		✓asymptote/*asimptoot* ✓intercepts/*afsnitte* ✓shape: increasing /*vorm: stygend* (3)

6.2.1	$w = -1$	✓ answ/*antw* (1)
6.2.2	$f(x) = \frac{k}{x} - 1$ $7 = \frac{k}{-2} - 1$ $k = -16$	✓ subst./*verv.* (–2 ; 7) ✓ answ/*antw* (2)
6.2.3	$f(x) = g(x)$ $\frac{-16}{x} - 1 = -x - 1$ $x^2 - 16 = 0$ $(x-4)(x+4) = 0$ $x_Q = 4$ or $x_P = -4$	✓equating/*verg.* ✓ simpl./*vereenv* ✓x = -4 at/*by* P ✓x = 4 at Q (4)
6.2.4	$-4 < x < 0$ or $x > 4$ **OR/*OF*** $x \in (-4 ; 0)$ or $x \in (4 ; \infty)$	✓ $-4 < x < 0$ ✓ $x > 4$ **OR/*OF*** ✓ (–4 ; 0) ✓(4 ; ∞) (2)
		[16]

QUESTION/*VRAAG* 7

7.1.1	$P(A)+P(B)=P(A \text{ or } B)$ **OR/*OF*** $P(A)+P(B)=1$ **OR/*OF*** $P(A)+P(B)=P(S)$	✓ answ/*antw* **OR /*OF*** (1) ✓ answ/*antw* **OR/*OF*** (1) ✓ answ/*antw* (1)
7.1.2	$P(A \text{ and } B)=0$	✓ answ/*antw* (1)
7.1.3	$P(B)=P(A')$ $=0,35$	✓ answ/*antw* (1)
7.2.1		✓20 (in the intersection/*in die snyding*) ✓28 (in T only/*slegs in T*) ✓ $x-20$ (in S only/*slegs in S*) ✓8 (outside/*buite of* S or/*of* T) (4)
7.2.2	$x-20+20+28+8=150$ $x=114$ Smartphone only/*Slegs slimfoon* $=114-20$ $=94$	✓equation/*verg.* ✓ value/*waarde* of/*van x* ✓ answ/*antw* (3)
7.2.3 (a)	P(S only/*slegs*) $=\frac{94}{150}=0,63$	✓ answ/*antw* (1)
7.2.3 (b)	P(S or/*of* T or neither/*of geeneen*) $=\frac{94}{150}+\frac{28}{150}+\frac{8}{150}$ $=\frac{130}{150}$ $=\frac{13}{15}$ $=0,87$ **OR/*OF*** P(S or/*of* T or neither/*of geeneen*) $=1-\frac{20}{150}$ $=\frac{13}{15}$ $=0,87$	✓addition/*optel* ✓ answ/*antw* (2) **OR/*OF*** ✓complementary rule/*komplementêre reël* ✓ answ/*antw* (2)
		[13]

TOTAL/*TOTAAL*: 100

GRADE 10 NOV. 2018 PAPER 1

1.1.1) $4x - x^3$
$= x(4-x^2)$ ✓
$= x(2+x)(2-x)$ ✓ (2)

1.1.2) $x^2 + 15x - 54$
$= (x+18)(x-3)$ ✓ (2)

1.1.3) $y - xy + x - 1$
$= y(1-x) + (x-1)$
$= -y(-1+x) + (x-1)$
$= (x-1)(-y+1)$ ✓ (3)

1.2.1) $(x+2)(x^2-x+3)$
$= x^3 - x^2 + 3x + 2x^2 - 2x + 6$ ✓
$= x^3 + x^2 + x + 6$ ✓ (2)

1.2.2) $\frac{5}{x+3} - \frac{3}{2-x}$
$= \frac{5(2-x) - 3(x+3)}{(x+3)(2-x)}$ ✓
$= \frac{10 - 5x - 3x - 9}{(x+3)(2-x)}$ ✓
$= \frac{1-8x}{(x+3)(2-x)}$ ✓ or $\frac{8x-1}{(x+3)(x-2)}$ (3)

1.2.3) $\frac{25^{-x} \cdot 15^{x+1}}{3^x \cdot 5^{-x}}$
$= \frac{(5^2)^{-x} \cdot (3.5)^{x+1}}{3^x \cdot 5^{-x}}$ ✓
$= \frac{5^{-2x} \cdot 3^{x+1} \cdot 5^{x+1}}{3^x \cdot 5^{-x}}$
$= \frac{3^{x+1} \cdot 5^{-x+1}}{3^x \cdot 5^{-x}}$ ✓
$= 3^1 \cdot 5^1 = 15$ ✓ (3)

1.3) $(3p+q)^2$
$= 9p^2 + 6pq + q^2$ ✓
$= 12 + 6(-3)$ ✓
$= -6$ ✓ (3)

[18]

2.1.1) $px + qx = q$
$\therefore x(p+q) = q$ ✓
$\therefore x = \frac{q}{p+q}$ ✓ (2)

2.1.2) $2x^2 - 5x + 2 = 0$
$\therefore (2x-1)(x-2) = 0$ ✓
$\therefore x = \frac{1}{2}$ or $x = 2$ ✓ (3)

2.1.3) $\left(\frac{1}{2}\right)^{3x+1} = 32$
$\therefore (2^{-1})^{3x+1} = 2^5$ ✓
$\therefore 2^{-3x-1} = 2^5$
$\therefore -3x - 1 = 5$ ✓ $\therefore -3x = 6$
$\therefore x = -2$ ✓ (3)

2.2.1) $-11 \leq 3m - 8 < 4$
$\therefore -3 \leq 3m < 12$ ✓
$\therefore -1 \leq m < 4$ ✓ (2)

2.2.2) 5 ✓ (1)

2.3) $5x + 4y = 21 \sim ①$ $y = 3 - 2x \sim ②$
$\therefore 5x + 4(3-2x) = 21$ ✓
$\therefore 5x + 12 - 8x = 21$
$\therefore -3x = 9$ $\therefore x = -3$ ✓
$\therefore y = 3 - 2(-3) = 9$ ✓ (4)

[15]

3.1) 11 ✓ (1)

3.2) $T_n = -3n + 23$ ✓✓ (2)

3.3) $-3n + 23 = -103$ ✓
$\therefore -3n = -126$
$\therefore n = 42$ ✓ (2)

3.4) $-3n + 23 < 0$ ✓
$\therefore -3n < -23$
$\therefore n > 7\frac{2}{3}$ ✓
$\therefore$ 8th term ✓ (3)

3.5) $T_n = -3n + 23$
$\therefore T_{39} = -3(37) + 23$ ✓
$= -88$ ✓ (2)

[10]

4.1.1) $4^2 = 16$ ✓ (1)

4.1.2) $13^2 = 169$ ✓ (1)

4.1.3) $T_n = n^2$ ✓ (1)

4.2) $22^2 = 484$ ✓ (3)

[6]

5.1.1) $y = \left(\frac{1}{2}\right)^0 - 4$ ✓
$= -3$
$\therefore D(0;-3)$ ✓ (2)

5.1.2) $y > -4$ ✓ (1)

5.2.1) $0 = \left(\frac{1}{2}\right)^x - 4$ ✓
$\therefore 4 = 2^{-x}$
$\therefore x = -2$
$\therefore A(-2;0)$ ✓ (2)

5.2.2) $y = ax^2 + q$
$y = a(x+2)(x-2)$ ✓
$y = a(x^2-4)$
$3 = a(1^2-4)$ ✓
$\therefore 3 = a(-3)$
$\therefore a = -1$ ✓
$\therefore y = -1(x^2-4)$
$\therefore y = -x^2 + 4$ ✓ (4)

5.3.1) $CD = 4 + 3 = 7$ ✓ (2)

5.3.2) $m = -\frac{3}{2}$ ✓
$\therefore y = -\frac{3}{2}x - 3$ ✓ (3)

5.4.1) $-2 < x < 2$ ✓✓ (2)

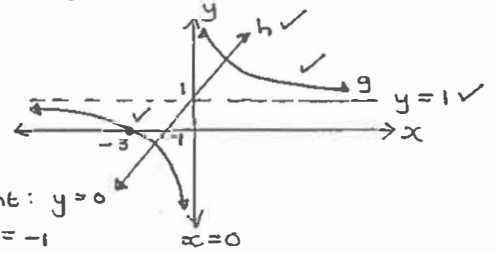
5.4.2) $x > 0$ ✓ (1)

[17]

6.1.1) $g: y = \frac{a}{x} + q$
$y = \frac{a}{x} + 1$ ✓
$\therefore 2 = \frac{a}{3} + 1$ ✓ $\therefore 6 = a + 3$ $\therefore a = 3$
$\therefore y = \frac{3}{x} + 1$ ✓ (3)

6.1.2) $y = 1x + c$ passes thr: (0;1)
$\therefore y = x + 1$ ✓ (2)

6.2)



x-int: $y = 0$
$\frac{3}{x} = -1$ $x = 0$
$\therefore 3 = -x$ $\therefore x = -3$ (4)

6.3) $f(x) = -g(x) + 5$
$\therefore y = 4$ ✓✓ and $x = 0$ ✓ (3)

[12]

7.1) $A = R229 \times 24 = R5496$ ✓ (1)

7.2) $P(1 + 2 \times 0{,}075) = 5496$ ✓
$\therefore P = \frac{5496}{(1+2\times0{,}075)} = R4\,779{,}13$ (2)

7.3) $Int = R5496 - R4779{,}13$
$= R716{,}87$ ✓ (1)

7.4) Insurance $= \frac{11{,}5}{100} \times 4779{,}13 \times 2$ ✓
$= R549{,}599.. \times 2 = R1099{,}1999$
$\therefore$ Ins. p/m $= \frac{1099{,}199.}{24} = R45{,}80$ ✓
$\therefore$ New inst $= R229 + R45{,}80$
$= R274{,}80$ ✓ (3)

7.5) $5100 = 4779{,}13(1+i)^2$ ✓
$\therefore \frac{5100}{4779{,}13} = (1+i)^2$ ✓
$\therefore \sqrt{\frac{5100}{4779{,}13}} = 1 + i$
$\therefore i = 0{,}03302\ldots$ ✓
$\therefore$ Rate $= 3{,}3\%$ ✓ (4)

[11]

8.1.1) $P(A) = \frac{2}{5}$ $P(B') = \frac{3}{8}$ $P(A \text{ or } B) = \frac{5}{7}$

a) $P(B) = \frac{5}{8}$ ✓✓ (2)

b) $P(A \text{ and } B) = P(A) + P(B) - P(A \text{ or } B)$ ✓

$= \frac{2}{5} + \frac{5}{8} - \frac{5}{7}$ ✓

$= \frac{87}{280}$ ✓ (3)

8.1.2) $P(A \text{ and } B) \neq 0$ ✓ ∴ Not Mutually ✓ exclusive (2)

8.2.1) $P(A \text{ and } B)$ ✓ (1)

8.2.2) $P(A \text{ or } B)'$ ✓ (1)

8.2.3) $P(A \text{ or } B) - P(A \text{ and } B)$ ✓ (1)

(or) $P(A \text{ only}) \cup P(B \text{ only})$

8.3) 8.2.3 ✓ (1)

[11]

QUESTION 1/*VRAAG 1* *45*

1.1	1.1.1	$x = 2$	✓ $x = 2$	(1)
	1.1.2	$x - 2 < 0$ $x < 2$	✓ $x - 2 < 0$ ✓ $x < 2$ **Answer only: Full marks** **Slegs antwoord: Volpunte**	(2)
1.2	1.2.1	$(a-2)(a^2+2a+4)$ $= a^3 - 8$	✓ a^3 ✓ -8	(2)
	1.2.2	$\left(\frac{a}{2}+1\right)\left(\frac{a}{2}-1\right)$ $= \frac{a^2}{4} - 1$	✓ $\frac{a^2}{4}$ ✓ -1	(2)
1.3	1.3.1	$2x^2 - x - 6$ $= (2x+3)(x-2)$	✓ $(2x+3)$ ✓ $(x-2)$	(2)
	1.3.2	$(a-b)^2 - 100c^2$ $= (a-b-10c)(a-c+10c)$	✓ $(a-b-10c)$ ✓ $(a-c+10c)$	(2)
				[11]

QUESTION 2/*VRAAG 2*

2.1	2.1.1	$x(x+5)=0$ $x=0$ or $x=-5$	✓ $x=0$ ✓ $x=-5$	(2)
	2.1.2	$\frac{2x+1}{3}=\frac{3x+1}{4}$ $4(2x+1)=3(3x+1)$ $8x+4=9x+3$ $x=1$	✓ $4(2x+1)=3(3x+1)$ ✓ $8x+4$ ✓ $9x+3$ ✓ $x=1$	(4)
2.2	$2(4-3x)\geq 20$ $8-6x\geq 20$ $-6x\geq 12$ $x\leq -2$		✓ $8-6x$ ✓ $-6x\geq 12$ ✓ $x\leq -2$	(3)
2.3	$a+b=12$ …….(1) $4a+2b=44$…….(2) From (1)….. $a=12-b$ $4(12-b)+2b=44$ $48-4b+2b=44$ $-2b=-4$ $b=2$ $a=10$ **OR** From (1)….. $b=12-a$ $4a+2(12-a)=44$ $4a+24-2a=44$ $2a=20$ $a=10$ $b=2$ **OR** $4a+4b=48$…….(3) (3) – (2) $2b=4$ $b=2$ $a=10$ **OR** $2a+2b=24$ …….(3) (2) – (3) $2a=20$ $a=10$ $b=2$	✓ $a=12-b$ ✓ $4(12-b)+2b=44$ ✓ $48-4b+2b=44$ ✓ $b=2$ ✓ $a=10$ ✓ $b=12-a$ ✓ $4a+2(12-a)=44$ ✓ $4a+24-2a=44$ ✓ $a=10$ ✓ $b=2$ ✓ ✓ $4a+4b=48$ ✓ $2b=4$ ✓ $b=2$ ✓ $a=10$ ✓ ✓ $2a+2b=24$ ✓ $2a=20$ ✓ $a=10$ ✓ $b=2$	(5)

2.4	Son/Seun Sipho Now/Tans x $7x$ In 25 years $x+25$ $7x+25$ Equation: Oor 25jaar $7x+25=2(x+25)$ vergelyking $7x+25=2x+50$ $5x=25$ $x=5$ His son is 5 years old/*Sy seun is 5 jaar oud.*	✓ $7x+25$ ✓ $2(x+25)$ ✓ $2x+50$ ✓ $5x=25$ $x=5$ ✓His son is 5 years old/Sy seun is 5 jaar oud	(5)
			[19]

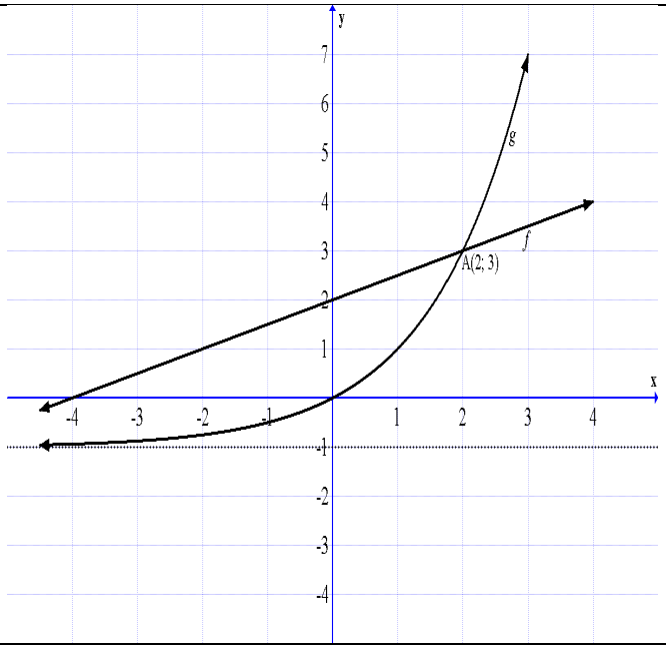
QUESTION 3/*VRAAG 3*

3.1	3.1.1	11 and/en14	✓ for both 11 and 14	(1)
	3.1.2	$T_n=3n-4$	✓ $3n$ ✓ -4	(2)
	3.1.3	$T_{33}=3(33)-4=95$	✓ $3(33)-4$ ✓ 95	(2)
	3.1.4	$3n-4=83$ $3n=87$ $n=29$	✓ $3n-4=83$ ✓ $n=29$	(2)
	3.1.5	$3n-4=116$ $3n=120$ $n=40$	✓ $3n-4=116$ ✓ $3n=120$ ✓ $n=40$	(3)
3.2	$3x+2-(x+3)=6x-1-(3x+2)$ $2x-1=3x-3$ $x=2$		✓ $3x+2-(x+3)$ ✓ $6x-1-(3x+2)$ ✓ $2x-1=3x-3$ ✓ $x=2$	(4)
				[14]

QUESTION 4/*VRAAG 4*

4.1	Amount/*Bedrag* = 18, 18 x 3569 = R64 884, 42		✓R64 884, 42	(1)
4.2	4.2.1	Loan/*Lening* = 0, 85 x 379 000 = R322 150 **OR/OF** Loan/*Lening* = 379 000 – 0,15 x 379 000 = R322 150	✓0, 85 x 379 000 ✓R322 150 **OR/OF** ✓379 000 – 0,15 x 379 000 ✓R322 150	(2) (2)
	4.2.2	$A = P(1+in)$ $A = 322150(1+0,225\times 4)$ $A = R612\ 085$	✓ $A = P(1+in)$ ✓ $A = 322150(1+0,225\times 4)$ ✓ $A = R612\ 085$	(3)
	4.2.3	Instalment/*Paaiement* $= \frac{612085}{48} = R12751,77$	✓ 48 ✓ $R12751,77$	(2)
4.3		$A = P(1+i)^n$ $96714,02 = P(1+0,067)^6$ $P = \frac{96714,02}{(1,067)^6}$ $P = R65539,47$	✓ $A = P(1+i)^n$ ✓ $96714,02 = P(1+0,067)^6$ ✓ $P = R65539,47$	(3)
				[11]

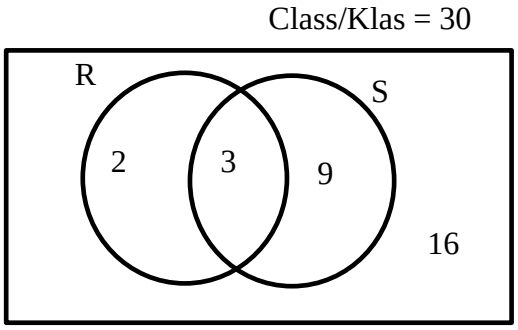
QUESTION 5/*VRAAG 5*

5.1	5.1.1	$y=-1$	✓ $y=-1$	(1)
	5.1.2		f: ✓ x – intercept/afsnit ✓ y – intercept/afsnit g: ✓asymptote/asimptoot ✓origin ✓shape/vorm and intersection	(5)
	5.1.3	$(2;3)$	✓ 2 ✓ 3	
	5.1.4	$g(-1)=-\frac{1}{2}$ $g(1)=1$ $m_{ave}=\frac{1-\left(-\frac{1}{2}\right)}{1-(-1)}=\frac{3}{4}$	✓ $g(-1)=-\frac{1}{2}$ ✓ $g(1)=1$ ✓ $m_{ave}=\frac{1-\left(-\frac{1}{2}\right)}{1-(-1)}$ ✓ $m_{ave}=\frac{3}{4}$	(4)
5.2	5.2.1	$m=\tan 45^\circ=1$	✓ 1	(1)
	5.2.2	$y=x$	✓ $y=x$	(1)
	5.2.3	$xy=4\times\frac{3}{2}=6$ $y=\frac{6}{x}$	✓ 6 ✓ $y=\frac{6}{x}$	(2)
	5.2.4	$A\left(\sqrt{6};\sqrt{6}\right)$	✓ $\sqrt{6}$ ✓ $\sqrt{6}$	(2)
				[11]

QUESTION 6/*VRAAG 6*

6.1	*f*: $y = ax^2 + q$ $0 = a(-2)^2 + 8$ $4a = -8$ $a = -2$ $y = -2x^2 + 8$ *g*: $m = \frac{-4-0}{0-(-2)} = -2$ $y = -2x - 4$	✓ $0 = a(-2)^2 + 8$ ✓ $a = -2$ ✓ $y = -2x^2 + 8$ ✓ $m = -2$ ✓ $y = -2x - 4$	(5)
6.2	$F(1;6)$ $G(1;-6)$ FG = 12 units/eenhede	✓ $F(1;6)$ ✓ $G(1;-6)$ ✓FG = 12 units/eenhede	(3)
6.3	$\{y : y \leq 8; y \in R\}$ **OR/OF** $(-\infty;8]$	✓✓ $\{y : y \leq 8; y \in R\}$ ✓✓ $(-\infty;8]$	(2) (2)
6.4	$-2 < x < 2$	$x > -2$ ✓ and/en $x < 2$ ✓	(2)
			[12]

QUESTION 7/*VRAAG 7*

7.1	7.1.1	$P(A)=\frac{2}{7}$ or/of 0,29	✓✓ $P(A)=\frac{2}{7}$ or/of 0, 29	(2)
	7.1.2	$P(V)=\frac{3}{7}$ or/of 0,43	✓✓ $P(V)=\frac{3}{7}$ or/of 0, 43	(2)
	7.1.3	$P(C)=\frac{4}{7}$ or/of 0,57	✓ $P(C)=\frac{4}{7}$ or/of 0, 57	(1)
7.2	7.2.1		✓ 2 ✓ 3 ✓ 9 ✓ 16	(4)
	7.2.2	$\frac{16}{30}=\frac{8}{15}=0,53$	✓✓ $\frac{16}{30}=\frac{8}{15}=0,53$	(2)
	7.2.3	(a) $\frac{14}{30}=\frac{7}{15}=0,47$	✓✓ $\frac{14}{30}=\frac{7}{15}=0,47$	(2)
		(b) $\frac{9}{30}=\frac{3}{10}=0,3$	✓✓ $\frac{9}{30}=\frac{3}{10}=0,3$	(2)
				[15]
			TOTAL/*TOTAAL*:	**100**