



Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Departement van Onderwys
Porafensie Ya Kapa Botjhabela: Lefapha la Thuto

**NATIONAL
SENIOR CERTIFICATE
*NASIONALE
SENIORSERTIFIKAAT***

GRADE/*GRAAD* 11

NOVEMBER 2024

**MATHEMATICS P1 / *WISKUNDE V1*
MARKING GUIDELINE / *NASIENRIGLYN***

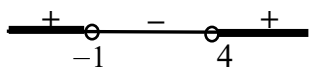
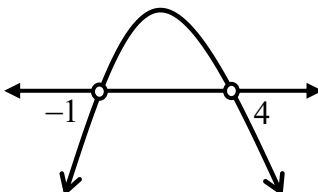
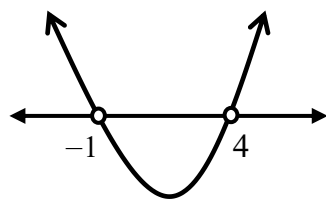
MARKS/*PUNTE*: 150

This marking guideline consists of 16 pages.
Hierdie nasienriglyn bestaan uit 16 bladsye.

NOTE/NOTA:

- If a candidate answered a question TWICE, mark the FIRST attempt ONLY.
Indien 'n kandidaat 'n vraag TWEE keer beantwoord het, merk SLEGS die EERSTE poging.
- Consistent accuracy (CA) applies in ALL aspects of the marking guideline.
Volgehoue akkuraatheid geld deurgaans in ALLE aspekte van die nasienriglyn.
- If a candidate crossed out an attempt of a question and did not redo the question, mark the crossed-out attempt.
Indien 'n kandidaat 'n poging vir 'n vraag deurgetrek het en nie die vraag weer beantwoord het nie, merk die poging wat deurgetrek is.
- The mark for substitution is awarded for substitution into the correct formula.
Die punt vir vervanging word toegeken vir vervanging in die korrekte formule.

QUESTION 1/VRAAG 1

1.1	1.1.1	$x^2 - 2x - 8 = 0$ $(x - 4)(x + 2) = 0$ $x - 4 = 0$ or/of $x + 2 = 0$ $x = 4$ or/of $x = -2$	Answers only – Full Marks <i>Slegs antwoorde – Volpunte</i>	$\checkmark x = -4$ $\checkmark x = -2$ (2)
	1.1.2	$2x^2 - 3x - 7 = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(2)(-7)}}{2(2)}$ $\therefore x = 2,77$ or/of $x = -1,27$	Penalise 1 mark for incorrect rounding off./ <i>Penaliseer 1 punt vir verkeerde afronding.</i>	$\checkmark$ standard form / <i>standaardvorm</i> $\checkmark$ substitution / <i>vervanging</i> $\checkmark\checkmark$ x-values / <i>x-waardes</i> (4)
	1.1.3	$(x + 1)(4 - x) > 0$ $(x + 1)(x - 4) < 0$ critical values/ <i>kritieke waardes</i> $x = -1$ or/of $x = 4$  $-1 < x < 4$, but/ <i>maar</i> $x \in \mathbb{N}$ $\therefore x \in \{1; 2; 3\}$ OR/OF $x \in (-1; 4)$, but/ <i>maar</i> $x \in \mathbb{N}$ $\therefore x = 1$ or/of $x = 2$ or/of $x = 3$ OR/OF $(x + 1)(4 - x) > 0$ critical values/ <i>kritieke waardes</i> $x = -1$ or/of $x = 4$  $-1 < x < 4$, but/ <i>maar</i> $x \in \mathbb{N}$ $\therefore x \in \{1; 2; 3\}$	 $\checkmark$ critical values / <i>kritieke waardes</i> $\checkmark -1 < x < 4$, but/ <i>maar</i> $x \in \mathbb{N}$ $\checkmark \therefore x \in \{1; 2; 3\}$ OR/OF $\checkmark$ critical values / <i>kritieke waardes</i> $\checkmark x \in (-1; 4)$, but/ <i>maar</i> $x \in \mathbb{N}$ $\checkmark \therefore x = 1$ or/of $x = 2$ or/of $x = 3$ OR/OF $\checkmark$ critical values / <i>kritieke waardes</i> $\checkmark -1 < x < 4$, but/ <i>maar</i> $x \in \mathbb{N}$ $\checkmark \therefore x \in \{1; 2; 3\}$ (3)	

1.2	1.2.1	$\frac{14}{p} = p + 5$ $p(p+5) = 14$ $p^2 + 5p - 14 = 0$ $(p+7)(p-2) = 0$ $p = -7 \text{ or / of } p = 2$	✓ multiplying by LCD <i>vermenigvuldig met KGD</i> ✓ factors / <i>faktore</i> ✓ answer / <i>antwoord</i> (3)
	1.2.2	$\frac{14}{\sqrt{x+5}} = \sqrt{x+5} + 5$ Let/Laat $\sqrt{x+5} = p$ $2 = \sqrt{x+5} \text{ or / of } -7 = \sqrt{x+5}$ But/Maar $-7 \neq \sqrt{x+5}$ $x+5 = (2)^2$ $x = 4 - 5$ $x = -1$	✓ $2 = \sqrt{x+5}$ or / of $-7 = \sqrt{x+5}$ ✓ $-7 \neq \sqrt{x+5}$ ✓ square both sides / <i>kwadreer beide kante</i> ✓ x-value/x-waarde (4)
1.3		$-3y = 1 - x \dots\dots\dots(1)$ $x^2 - 2xy - y^2 - 7 = 0 \dots\dots(2)$ From / Vanaf (1): $x = 1 + 3y \dots\dots\dots(3)$ (3) into/in (2): $(1+3y)^2 - 2y(1+3y) - y^2 - 7 = 0$ $1 + 6y + 9y^2 - 2y - 6y^2 - y^2 - 7 = 0$ $2y^2 - 4y - 6 = 0$ $y^2 - 2y - 3 = 0$ $(y-3)(y+1) = 0$ $y = 3 \text{ or/of } y = -1$ $x = 10 \text{ or/of } x = -2$	✓ $x = 1 + 3y$ ✓ substitution / <i>vervanging</i> ✓ standard form / <i>standaardvorm</i> ✓ factors / <i>faktore</i> ✓ y-values / <i>y-waardes</i> ✓ x-values / <i>x-waardes</i> (6)

1.4	$\frac{2}{x} + \frac{1}{x^2} = 3$ $2x + 1 - 3x^2 = 0$ $3x^2 - 2x - 1 = 0$ $(3x + 1)(x - 1) = 0$ $x = -\frac{1}{3} \text{ or / of } x = 1 \text{ but / maar } x < 0$ $\therefore x = -\frac{1}{3}$ $2(6x - 1)^{-1}$ $= \frac{2}{6x - 1}$ $= \frac{2}{6\left(-\frac{1}{3}\right) - 1}$ $= \frac{2}{-2 - 1}$ $= -\frac{2}{3}$	✓ multiplying by LCD <i>vermenigvuldig met KGD</i> ✓ x-value / x-waarde ✓ substitution / <i>vervanging</i> ✓ answer / <i>antwoord</i>
		(4)
		[26]

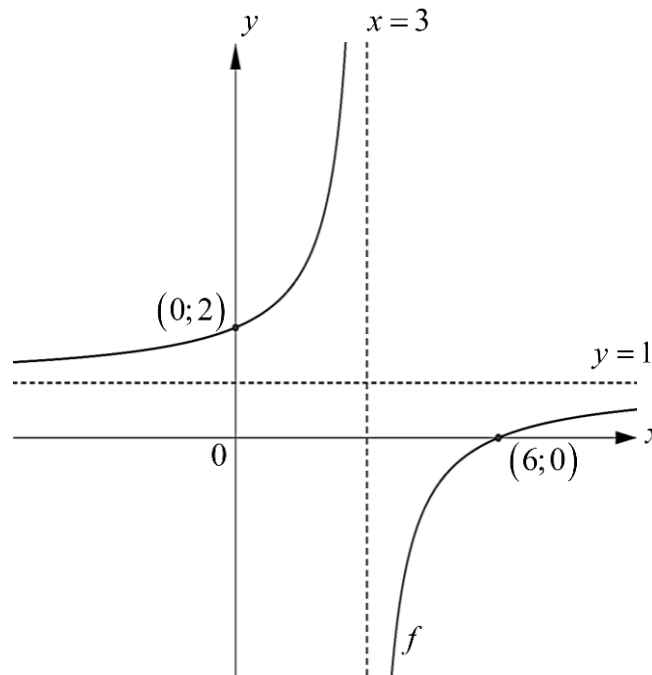
QUESTION 2/VRAAG 2			
2.1		$\frac{\sqrt{32} - \sqrt{18} + 3\sqrt{3}}{\sqrt{108} + \sqrt{8}}$ $= \frac{\sqrt{16 \times 2} - \sqrt{9 \times 2} + 3\sqrt{3}}{\sqrt{36 \times 3} + \sqrt{4 \times 2}}$ $= \frac{4\sqrt{2} - 3\sqrt{2} + 3\sqrt{3}}{6\sqrt{3} + 2\sqrt{2}}$ $= \frac{3\sqrt{3} + \sqrt{2}}{6\sqrt{3} + 2\sqrt{2}}$ $= \frac{3\sqrt{3} + \sqrt{2}}{2(3\sqrt{3} + \sqrt{2})}$ $= \frac{1}{2}$	✓ factors of 32 , 18 , 108 and 8 (square number and prime factor) <i>faktore van 32, 18, 108 en 8</i> (vierkantgetal en priemgetal) ✓ $\frac{4\sqrt{2} - 3\sqrt{2} + 3\sqrt{3}}{6\sqrt{3} + 2\sqrt{2}}$ ✓ $\frac{3\sqrt{3} + \sqrt{2}}{2(3\sqrt{3} + \sqrt{2})}$ ✓ answer / <i>antwoord</i> (4)
2.2	2.2.1	$2x^{\frac{-5}{2}} = 64$ $x^{\frac{-5}{2}} = 32$ $x = (2^5)^{\frac{2}{-5}}$ $x = 2^{-2}$ $x = \frac{1}{2^2}$ $x = \frac{1}{4}$	✓ dividing by 2 / <i>deel deur 2</i> ✓ raising by the reciprocal of $-\frac{5}{2}$ <i>tot die mag van omgekeerde van $-\frac{5}{2}$</i> ✓ answer / <i>Antwoord</i> (3)
	2.2.2	$3 \cdot 5^x - 5^{x-1} = 14$ $3 \cdot 5^x - 5^x \cdot 5^{-1} = 14$ $5^x \left(3 - \frac{1}{5} \right) = 14$ $5^x \cdot \frac{14}{5} = 14$ $5^x = 14 \times \frac{5}{14}$ $5^x = 5$ $\therefore x = 1$	✓ reversing the law / <i>die omkeer van die wet $a^m \times a^n = a^{m+n}$</i> application of / <i>toepassing van $a^{m+n} = a^m \times a^n$</i> ✓ common factor / <i>gemene faktor</i> ✓ simplification / <i>vereenvoudiging</i> ✓ $5^x = 5$ ✓ answer / <i>antwoord</i> (5)

2.3	$\sqrt{a} + \sqrt{b} = \sqrt{9 + \sqrt{56}}$ $(\sqrt{a} + \sqrt{b})^2 = (\sqrt{9 + \sqrt{56}})^2$ $a + b + 2\sqrt{ab} = 9 + \sqrt{2 \times 14}$ $a + b + 2\sqrt{ab} = 9 + 2\sqrt{14}$ but / maar, $\sqrt{56} = 2\sqrt{14}$ $\therefore a + b = 9 \quad \text{and / en} \quad 2\sqrt{ab} = 2\sqrt{14} \Rightarrow ab = 14$ by inspection / deur inspeksie: $a = 2 \quad \text{or / of} \quad b = 7$ $\therefore a^2 + b^2 = (2)^2 + (7)^2$ $= 53$ OR/OF $\sqrt{a} + \sqrt{b} = \sqrt{9 + \sqrt{56}}$ $(\sqrt{a} + \sqrt{b})^2 = (\sqrt{9 + \sqrt{56}})^2$ $a + b + 2\sqrt{ab} = 9 + \sqrt{2 \times 14}$ $a + b + 2\sqrt{ab} = 9 + 2\sqrt{14}$ but / maar, $\sqrt{56} = 2\sqrt{14}$ $\therefore a + b = 9 \quad \text{and / en} \quad 2\sqrt{ab} = 2\sqrt{14} \Rightarrow ab = 14$ $a = 9 - b \dots \dots \dots (1)$ $ab = 14 \dots \dots \dots (2)$ $b(9 - b) = 14$ $9b - b^2 - 14 = 0$ $b^2 - 9b + 14 = 0$ $(b - 2)(b - 7) = 0$ $b = 2 \quad \text{or / of} \quad b = 7$ for / vir $b = 2 : a = 7$ for / vir $b = 7 : a = 2$ $\therefore a^2 + b^2 = 53$	$\checkmark \text{ squaring both sides}$ <i>kwadreer albei kante</i> $\checkmark \sqrt{56} = 2\sqrt{14}$ $\checkmark a + b = 9 \quad \text{and/en} \quad 2\sqrt{ab} = 2\sqrt{14}$ $\checkmark a = 2 \quad \text{or / of} \quad b = 7$ $\checkmark a^2 + b^2 = 53$ OR/OF $\checkmark \text{ squaring both sides}$ <i>kwadreer albei kante</i> $\checkmark \sqrt{56} = 2\sqrt{14}$ $\checkmark a + b = 9 \quad \text{and/en} \quad 2\sqrt{ab} = 2\sqrt{14}$ $\checkmark a = 2 \quad \text{or / of} \quad b = 7$ $\checkmark a^2 + b^2 = 53$ (5) [17]
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QUESTION 3/VRAAG 3			
3.1	3.1.1	$-5; -9; -13; \dots$ $-17; -21$	$\checkmark -17$ $\checkmark -21$ (2)
	3.1.2	$T_n = dn + c$ $d = -4$ $T_n = -4n + c$ Subst. / Verv. ($T_1 = -5$) $-5 = -4(1) + c$ $\therefore c = -1$ $T_n = -4n - 1$	$\checkmark d = -4$ $\checkmark c = -1$ (2)
	3.1.3	$-141 = -4n - 1$ $-140 = -4n$ $\therefore n = 35$	$\checkmark$ equating / gelykstel $\checkmark$ value of n / waarde van n (2)
3.2		$T_1 = x$ $d = x - 5$ Sequence / Ry : $x; x + (x - 5); x + 2(x - 5)$ Equation / Vergelyking : $x + x + (x - 5) + x + 2(x - 5) = 63$ $4x - 5 + 2x - 10 = 63$ $6x = 78$ $x = 13$	$\checkmark x - 5$ $\checkmark T_2 \text{ \& } T_3$ $\checkmark$ equating to 63 / stel gelyk aan 63 $\checkmark$ simplification / vereenvoudiging $\checkmark$ value of x / waarde van x (5)
			[11]

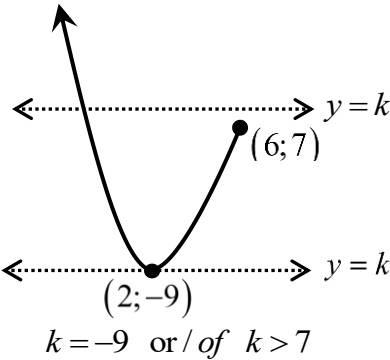
QUESTION 4/VRAAG 4		
4.1	$24 \quad ; \quad 10 \quad ; \quad 0 \quad ; \quad -6$ $-14 \quad ; \quad -10 \quad ; \quad -6$ $4 \quad ; \quad 4$	✓ first difference / <i>eerste verskil</i> ✓ second difference / <i>tweede verskil</i> (2)
4.2	$2a = 4$ $a = 2$ $3(2) + b = -14$ $b = -14 - 3(2)$ $b = -20$ $a + b + c = 24$ $c = 24 - 2 + 20$ $c = 42$ $T_n = 2n^2 - 20n + 42$	✓ $a = 6$ ✓ $b = -9$ ✓ $c = 6$ ✓ $T_n = 2n^2 - 20n + 42$ (4)
4.3	$T_{52} = 2(52)^2 - 20(52) + 42$ $= 4410$	✓ substitution / <i>vervanging</i> ✓ answer / <i>antwoord</i> (2)
4.4	$T_n = 2n^2 - 20n + 42$ $n = \frac{-b}{2a}$ $n = \frac{-(-20)}{2(2)} = 5$ $T_5 = 2(5)^2 - 20(5) + 42$ $= -8$ Therefore, the smallest value of the sequence is -8 <i>Daarom is die kleinste waarde van die ry -8</i> OR / OF $T_n = 2n^2 - 20n + 42$ $T_n = 2(n^2 - 10n + 21)$ $T_n = 2(n^2 - 10n + (-5)^2 - (-5)^2 + 21)$ $T_n = 2((n-5)^2 - 4)$ $T_n = 2(n-5)^2 - 8$ Therefore, the smallest value of the sequence is -8 <i>Daarom is die kleinste waarde van die ry -8</i>	 ✓ value of n / <i>waarde van n</i> ✓ substitution / <i>vervanging</i> ✓ answer / <i>antwoord</i> OR / OF ✓ common factor <i>gemene faktor</i> ✓ completing the square <i>voltooing van die vierkant</i> ✓ answer / <i>antwoord</i> (3)
4.5	$T_n = 2n^2 - 20n + 42$ $2n^2 - 20n + 42 > 0$ $n^2 - 10n + 21 > 0$ $(n-7)(n-3) > 0$ $c.v's\{3; 7\}$ $\therefore 1 \leq n < 3 \text{ or/ of } n > 7, n \in \mathbb{N}$ Accept/Aanvaar: $1 \leq n \leq 3 \text{ or } n \geq 7, n \in \mathbb{N}$	✓ $T_n > 0$ ✓ factors / <i>faktore</i> ✓ $1 \leq n < 3 \text{ or / of } n > 7$ ✓ $n \in \mathbb{N}$ (4)
		[15]

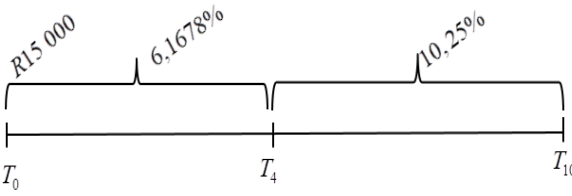
QUESTION 5/VRAAG 5

5.1	$x - 2 = -x + 4$ $2x = 6$ $x = 3$ $x - 3 = 0$ $\therefore p = -3$ $y = x - 2$ $= (3) - 2$ $= 1$ $\therefore q = 1$	OR/OF	$y = -x + 4$ $= -(3) + 4$ $= 1$ $q = 1$	✓ equating / <i>gelyk stel</i> ✓ $x - 3 = 0$ ✓ substituting x / <i>vervang x</i> ✓ $y = 1$ (4)
5.2	$x - \text{int} / x - \text{afsnit} : (y = 0)$ $\frac{-3}{x-3} + 1 = 0$ $\frac{-3}{x-3} = -1$ $-x + 3 = -3$ $x = 6$			✓ Letting / <i>Laat $y = 0$</i> ✓ $x = 6$ (2)
5.3	$y - \text{int} / y - \text{afsnit} : (x = 0)$ $y = \frac{-3}{0-3} + 1$ $y = 2$			✓ Letting / <i>Laat $x = 0$</i> ✓ $y = 2$ (2)
5.4				✓ shape / <i>vorm</i> ✓ asymptotes / <i>asimptote</i> ✓ intercepts / <i>afsnitte</i> (3)

5.5	Vertical asymptote of g (by inspection) : $x = -3$ <i>Vertikale asimptoot van g (deur inspeksie)</i> $\therefore x \in \mathbb{R}; x \neq -3$ OR/OF $f(x) = \frac{-3}{x-3} + 1$ $x = 0 \Rightarrow y\text{-axis /y-as}$ $g(x) = f(-x) = \frac{-3}{-x-3} + 1$ $-x-3 = 0$ $x = -3$ $\therefore x \in \mathbb{R}; x \neq -3$	✓ vertical asymptote <i>vertikale asimptoot</i> ✓✓ $x \in \mathbb{R}; x \neq -3$ OR/OF ✓ vertical asymptote <i>vertikale asimptoot</i> ✓✓ $x \in \mathbb{R}; x \neq -3$ (3)
5.6	$x \leq 0$ or / of $3 < x \leq 6$	✓ $x \leq 0$ ✓✓ $3 < x \leq 6$ (3)
		[17]

QUESTION 6/VRAAG 6		
6.1	$f(x) = x^2 - 4x - 5$ $f(6) = (6)^2 - 4(6) - 5$ $= 7$	✓ answer / <i>antwoord</i> (1)
6.2	$x^2 - 4x - 5 = 0$ $(x - 5)(x + 1) = 0$ $x = 5$ or / <i>of</i> $x = -1$ $\therefore A(-1; 0) \quad B(5; 0)$	✓ factors / <i>faktore</i> ✓ coordinates of A / <i>koördinate van A</i> ✓ coordinates of B / <i>koördinate van B</i> (3)
6.3	$AB = x_B - x_A$ $= 5 - (-1) = 6$ units / <i>eenhede</i>	✓ answer / <i>antwoord</i> (1)
6.4	$g(x) = (x - 2)^2 - 4(x - 2) - 5 + 5$ $= x^2 - 4x + 4 - 4x + 8 - 5 + 5$ $= x^2 - 8x - 12$	✓ $(x - 2)$ ✓ $+5$ ✓ answer / <i>antwoord</i> (3)
6.5	$h(x) = -2x + c$ $f(x) = x^2 - 4x - 5$ $x^2 - 4x - 5 = -2x + c$ $x^2 - 2x - 5 - c = 0$ $\Delta = b^2 - 4ac$ $= (-2)^2 - 4(1)(-5 - c)$ $= 4 - 4(-5 - c)$ $= 4 + 20 + 4c$ $= 24 + 4c$ Tangent $\Rightarrow$ one solution / <i>Raaklyn $\Rightarrow$ een oplossing</i> $\therefore \Delta = 0$ $24 + 4c = 0$ $4c = -24$ $c = -6$ Therefore, y-int = -6 / <i>Daarom, y-afsnit = -6</i>	✓ $f(x) = g(x)$ ✓ simplification / <i>vereenvoudiging</i> ✓ $\Delta = 24 + 4c$ ✓ $\Delta = 0$ ✓ $c = -6$ (5)

6.6	$f(x) = k$ $x = \frac{-b}{2a}$ $= -\frac{-(-4)}{2(1)}$ $= 2$ $f(2) = -9$ 	$\checkmark f(2) = -9$ $\checkmark\checkmark k = -9 \text{ or / of } k > 7$ (3)
[16]		
QUESTION 7/VRAAG 7		
7.1	B(0; 7)	$\checkmark$ answer / antwoord (1)
7.2	$f(x) = -b^x + 8$ subst. / verv.: (-2; 4) $4 = -b^{-2} + 8$ $b^{-2} = 4$ $\frac{1}{b^2} = 4$ $b^2 = \frac{1}{4}$ $b = \pm\sqrt{\frac{1}{4}}$ $\therefore b = \frac{1}{2} ; b > 0$	$\checkmark$ substitution of (-2; 4) vervanging van (-2; 4) $\checkmark b = \pm\sqrt{\frac{1}{4}}$ (2)
7.3	Average gradient / Gemiddelde gradiënt = $\frac{3}{2}$	$\checkmark\checkmark \frac{3}{2}$ (2)
7.4	$y = 8$	$\checkmark$ answer / antwoord (1)

7.5	$f(-1) = -\left(\frac{1}{2}\right)^{-1} + 8 = 6$ $g(-1) = \frac{3}{2}(-1) + 7 = \frac{11}{2}$ $f(-1) - g(-1) = 6 - \frac{11}{2}$ $= \frac{1}{2} \text{ unit/eenheid}$	$\checkmark f(-1) = 6$ $\checkmark g(-1) = \frac{11}{2}$ $\checkmark f(-1) - g(-1) = \frac{1}{2}$	(3)
7.6	- Reflection along x-axis / <i>Refleksie langs die x-as</i> $-f(x) = \left(\frac{1}{2}\right)^x - 8$ - then, vertical translation by 3 units upwards <i>dan, vertikale translasie van 3 eenhede opwaarts</i> $h(x) = \left(\frac{1}{2}\right)^x - 8 + 3$ $= \left(\frac{1}{2}\right)^x - 5$	$\checkmark$ Reflection along x -axis <i>Refleksie langs die x-as</i> $\checkmark$ 3 units upwards <i>3 eenhede opwaarts</i>	(2)
7.7	$-2 \leq x \leq 0$ or / of $x \in [-2; 0]$	$\checkmark\checkmark$ answer / <i>antwoord</i>	(2)
QUESTION 8/VRAAG 8			
8.1	$A = P(1-i)^n$ $= 14\,500(1-0,13)^5$ $= R7\,227,10$	$\checkmark i = 0,13$ $\checkmark$ substitution into the correct formula <i>vervanging in die korrekte formule</i> $\checkmark$ answer / <i>antwoord</i>	(3)
8.2	8.2.1 $i_{\text{eff}} = \left(1 + \frac{0,06}{12}\right)^{12} - 1$ $= 6,1678\%$ $i_{\text{eff}} = \left(1 + \frac{0,1}{2}\right)^2 - 1$ $= 10,25\%$	$\checkmark i_{\text{eff}} = \left(1 + \frac{0,06}{12}\right)^{12} - 1$ $\checkmark 6,1678\%$ $\checkmark i_{\text{eff}} = \left(1 + \frac{0,1}{2}\right)^2 - 1$ $\checkmark 10,25\%$	(4)
	8.2.2  $A = 15\,000 \left(1 + \frac{6,1678}{100}\right)^4 (1 + 0,1025)^6$ $= R34\,224,26$	$\checkmark 15\,000 \left(1 + \frac{6,1678}{100}\right)^4$ $\checkmark \times (1 + 0,1025)^6$ $\checkmark n = 4$ and / en $n = 6$ $\checkmark$ answer / <i>antwoord</i>	(4)

8.2.3	$15\,000\left(1+\frac{0,06}{12}\right)^{48}\left(1+\frac{x}{4}\right)^8\left(1+\frac{x}{2}\right)^8 = 48\,897,03$ $\left[\left(1+\frac{x}{4}\right)\left(1+\frac{x}{2}\right)\right]^8 = 2,565784627$ $1+\frac{x}{2}+\frac{x}{4}+\frac{x^2}{8} = 1,125$ $8+4x+2x+x^2 = 9$ $x^2+6x-1=0$ $x = \frac{-(6) \pm \sqrt{(6)^2 - 4(1)(-1)}}{2(1)}$ $x = 0,1623 \text{ or/of } x \neq -6,1623$ $\therefore \text{Interest rate/Rentekoers} = 16,23\%$	$15000\left(1+\frac{6\%}{12}\right)^{48}\left(1+\frac{x}{4}\right)^8\left(1+\frac{x}{2}\right)^8 = 48897,03$ $\checkmark \left[\left(1+\frac{x}{4}\right)\left(1+\frac{x}{2}\right)\right]^8 = 2,565784627$ $\checkmark \text{ multiplying by the LCD / vermenigvuldig met KGD}$ $\checkmark \text{ standard form / standaardvorm}$ $\checkmark \text{ answer / antwoord} \quad (5)$
		[16]

QUESTION 9/VRAAG 9

9.1	9.1.1	At least detected by one camera $\Rightarrow A \text{ or } B$ <i>Ten minste deur een kamera opgespoor</i> $\Rightarrow A \text{ of } B$ $P(A \text{ or / of } B) = P(A) + P(B) - P(A \text{ and / en } B)$ $= 0,5 + 0,6 - (0,5 \times 0,6)$ $= 0,8$	$\checkmark 0,5 \times 0,6$ $\checkmark \text{ substitution into the correct formula}$ $\text{vervanging in die korrekte formule}$ $\checkmark \text{ answer / antwoord} \quad (3)$
	9.1.2	$P(\text{Not detected}) = 1 - (\text{at least detected by one})$ $P(\text{Nie opgespoor}) = 1 - (\text{ten minste deur een opgespoor})$ $= 1 - 0,8$ $= 0,2$	$\checkmark 1 - 0,8$ $\checkmark \text{ answer / antwoord} \quad (2)$
9.2	9.2.1	$x = 110 - (26 + 9 + 12 + 4 + 24 + 15 + 12)$ $= 8$	$\checkmark \checkmark 110 - (26 + 9 + 12 + 4 + 24 + 15 + 12)$ (2)
	9.2.2	$\frac{26 + 24 + 15}{110}$ $= \frac{65}{110} \approx 0,59$	$\checkmark 65$ $\checkmark \frac{65}{110} \text{ or / of } \frac{13}{22} \text{ or / of } 0,59$ (2)
	9.2.3	$\frac{12}{110}$ $\frac{6}{55} \approx 0,12$	$\checkmark 12$ $\checkmark \frac{6}{55} \text{ or / of } 0,12$ (2)
			[11]

QUESTION 10/VRAAG 10

	Let / Laat Red/Rooi – R Blue/Blou – B Green/Groen – G $\frac{1}{3} \times \frac{5}{8} = \frac{5}{24}$ $\frac{1}{3} \times \frac{3}{8} = \frac{1}{8}$ $\therefore \frac{5}{24} + \frac{1}{8} = \frac{1}{3}$ <i>P</i>(same colour / <i>dieselfde kleur</i>) $= \frac{1}{3}$ or / <i>of</i> $\approx 0,33$	✓✓ branches/ <i>takke</i> (R ; B) ✓ probabilities/ <i>waarskynlikhede</i> (R; R) ✓ outcomes/ <i>uikomste</i> (B ; B) (B ; R) (R ; B) (G ; R) ✓ $\frac{5}{24}$ ✓ $\frac{1}{8}$ ✓ answer / <i>antwoord</i> (8)
	Alternative Marking / Alternatiewe Nasien ✓ $\frac{1}{3}$ ✓ $\frac{5}{8}$ ✓ $\frac{5}{24}$ ✓ $\frac{1}{3}$ ✓ $\frac{3}{8}$ ✓ $\frac{1}{8}$	✓ addition / <i>optelling</i> ✓ answer / <i>antwoord</i> [8]
	TOTAL / TOTAAL: 150	