Province of the EASTERN CAPE EDUCATION

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Porafensie Ya Kapa Botjhabela: Lefapha la Thuto

NATIONAL
SENIOR CERTIFICATE/
NASIONALE SENIOR
SERTIFIKAAT

GRADE/GRAAD 11

NOVEMBER 2025

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

MARKS/*PUNTE*: 150

This marking guideline consists of 21 pages.
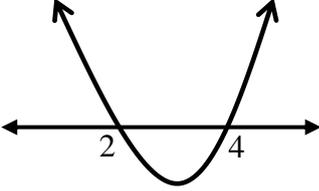Hierdie nasienriglyn bestaan uit 21 bladsye.

NOTE/*LET WEL*:

- If a candidate answers a question TWICE, mark the FIRST attempt ONLY.
  Indien 'n kandidaat 'n vraag TWEE keer beantwoord, merk SLEGS die EERSTE poging.
- Consistent accuracy 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 substitusie word toegeken vir substitusie in die korrekte formule.

QUESTION/*VRAAG* 1

1.1.1	$x(2x+6)=0$ $x=0$ or/*of* $2x+6=0$ $x=0$ or/*of* $x=-3$	$\checkmark$ $x=0$ $\checkmark$ $x=-3$ (2)
1.1.2	$4x^2+3x-9=0$ $x=\dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$ $x=\dfrac{-3\pm\sqrt{(3)^2-4(4)(-9)}}{2(4)}$ $x=\dfrac{-3\pm\sqrt{153}}{8}$ $\therefore x=1,17$ or/*of* $x=-1,92$ *[Box:]* Penalise 1 mark for incorrect rounding off./ *Penaliseer 1 punt vir verkeerde afronding.*	$\checkmark$ standard form / *standaardvorm* $\checkmark$ substitution / *vervanging* $\checkmark$ $x=1,17$ or/*of* $\checkmark$ $x=-1,92$ (4)

1.1.3	$x(x-4)+2(4-x)>0$ $x(x-4)-2(x-4)>0$ $(x-4)(x-2)>0$ critical values / *kritieke waardes* $x=4$ or / *of* $x=2$ $x<2$ or / *of* $x>4$	✓ $-2(x-4)$ ✓ critical values / *kritieke waardes* ✓✓ $x<2$ *or* $x>4$ (accuracy / *akkuraatheid*) (4)
1.1.4 (a)	$x+14\geq 0$; $x\neq -2$ $x\geq -14$	✓ $x\geq -14$ ✓ $x\neq -2$ (2)
(b)	$\dfrac{\sqrt{x+14}}{x+2}=1$ $\sqrt{x+14}=x+2$ $x+14=x^2+4x+4$ $x^2+3x-10=0$ $(x+5)(x-2)=0$ $x\neq -5$ *or* / *of* $x=2$	✓ isolating surd / *isoleer wortelvorm* ✓ square both sides / *kwadreer beide kante* ✓ factors / *faktore* ✓ answer with choice / *antwoord met keuse* (-5 excluded / *uitgesluit*) (4)

1.2	$x - 3y = 1$.......................................(1)	
	$x^2 - 2xy + 9y^2 = 17$..........................(2)	
	From / *Vanaf* (1): $x = 3y + 1$ ....(3)	✓ $x = 3y + 1$
	(3) into/*in* (2):	
	$(3y + 1)^2 - 2y(3y + 1) + 9y^2 = 17$	✓ substitution / *vervanging*
	$9y^2 + 6y + 1 - 6y^2 - 2y + 9y^2 - 17 = 0$	
	$12y^2 + 4y - 16 = 0$	✓ standard form / *standaardvorm*
	$3y^2 + y - 4 = 0$	✓ factors / *faktore*
	$(y - 1)(3y + 4) = 0$	
	$y = 1$ or/*of* $y = -\dfrac{4}{3}$	✓ y values / *y-waardes*
	$x = 4$ or/*of* $x = -3$	✓ x values / *x-waardes*
		(6)
1.3	$1 + \dfrac{10}{1 + \dfrac{1}{1 + \dfrac{1}{x}}} = 7$	
	$1 + \dfrac{10}{1 + \dfrac{1}{\dfrac{x+1}{x}}} = 7$	✓ $\dfrac{1}{\dfrac{x+1}{x}}$
	$1 + \dfrac{10}{1 + \dfrac{x}{x+1}} = 7$	✓ $\dfrac{x+1}{x}$
	$1 + \dfrac{10}{\dfrac{x+1+x}{x+1}} = 7$	
	$1 + \dfrac{10}{\dfrac{2x+1}{x+1}} = 7$	✓ $\dfrac{2x+1}{x+1}$
	$1 + \dfrac{10(x+1)}{2x+1} = 7$	
	$\dfrac{2x+1+10x+10}{2x+1} = 7$	✓ $\dfrac{2x+1+10x+10}{2x+1}$
	$\dfrac{12x+11}{2x+1} = 7$	
	$12x + 11 = 14x + 7$	
	$2x = 4$	✓ answer / *antwoord*
	$x = 2$	(5)

QUESTION/*VRAAG 2*

2.1	$\dfrac{125^x \cdot \sqrt{5^{4x-2}}}{\sqrt[3]{5^{12x+6}} \cdot 5^x}$	$\checkmark$ $125^x = 3^{3x}$
	$= \dfrac{5^{3x} \cdot 5^{2x-1}}{5^{4x+2} \cdot 5^x}$	$\checkmark$ $\sqrt{5^{4x-2}} = 5^{2x-1}$ and/*en*
		$\sqrt[3]{5^{12x+6}} = 5^{4x+2}$
	$= 5^{3x-x+2x-1-4x-2}$	
	$= 5^{-3}$	$\checkmark$ $5^{3x+2x-1-4x-2-x}$
	$= \dfrac{1}{125}$	$\checkmark$ answer / *antwoord*
		(4)

2.2.1	$6x^{\frac{3}{2}} = 48$	
	$x^{\frac{3}{2}} = 8$	$\checkmark$ dividing by 6 / *deel deur* 6
	$x = \left(2^3\right)^{\frac{2}{3}}$	$\checkmark$ raising by reciprocal *verhef tot omgekeerde/resiprook*
	$x = 2^2$	$\checkmark$ answer / *antwoord*
	$x = 4$	(3)

2.2.2	$\left(x^{\frac{1}{4}}\right)^2 - 3x^{\frac{1}{4}} + 2 = 0$	$\checkmark$ $\left(x^{\frac{1}{4}}\right)^2$
	let/*laat* : $k = x^{\frac{1}{4}}$	
	$k^2 - 3x + 2 = 0$	
	$(k-2)(k-1) = 0$ **OR /OF** $\left(x^{\frac{1}{4}} - 2\right)\left(x^{\frac{1}{4}} - 1\right)$	$\checkmark$ factors / *faktore*
	$k = 2$ or/*of* $k = 1$	
	$x^{\frac{1}{4}} = 2$ or/*of* $x^{\frac{1}{4}} = 1$	$\checkmark$ $x^{\frac{1}{4}} = 2$ or/*of* $x^{\frac{1}{4}} = 1$
	$x = 16$ or/*of* $x = 1$	$\checkmark$ answers / *antwoord*
		(4)

2.3	$A = L \times B$ $16^x - 100 = L \times (4^x + 10)$ $L = \dfrac{(4^x)^2 - 100}{4^x + 10}$ $L = \dfrac{(4^x - 10)(4^x + 10)}{4^x + 10}$ $L = 4^x - 10$ $\therefore \text{Length} = 4^x - 10$	✓ substitution into area formula *vervanging in oppervlakte formule* ✓ $16^x = (4^x)^2$ ✓ factors of difference of 2 squares *faktore van verskil tussen 2 kwadrate* ✓ answer / *antwoord* (4)
2.4	Smaller integer / *Kleiner heelgetal* $= x$ next consecutive integer / *opeenvolgende heelgetal* $= x + 1$ Difference / *Verskil* : $(x+1)^2 - x^2 = 45$ $\quad\quad x^2 + 2x + 1 - x^2 = 45$ $\quad\quad\quad\quad 2x = 44$ $\quad\quad\quad\quad x = 22$ $\therefore (22 + 23)^2 = 2025$	✓ difference / *verskil* ✓ equating the difference to 45 *stel verskil gelyk aan* 45 ✓ $x = 22$ ✓ $(\text{sum})^2 / (\text{som})^2 = 2025$ (4)
		[19]

QUESTION/*VRAAG 3*

3.1.1	$d = -0,5$ $4 \; ; \; 3,5$	✔ 4 ✔ 3,5 (2)
3.1.2	$T_n = -0,5n + 6$	✔ $-0,5n$ ✔ $+6$ (2)
3.1.3	$-\dfrac{1}{2}n + 6 < -113,5$ $-0,5n < 119,5$ $n > 239$ $n = 240$	✔ $-\dfrac{1}{2}n + 6 < -113,5$ ✔ answer / *antwoord* (2)
3.2.1	$d = 5$ $T_n = 5n + c$ but / *maar*: $T_{38} = 192$ $192 = 5(38) + c$ $c = 2$ $T_1 = 5(1) + 2 = 7$ $\therefore$ First term is 7 / *Eerste term is* 7	✔ $T_n = 5n + c$ ✔ substitution / *vervanging* ✔ answer / *antwoord* (3)
		[9]

QUESTION/*VRAAG* 4

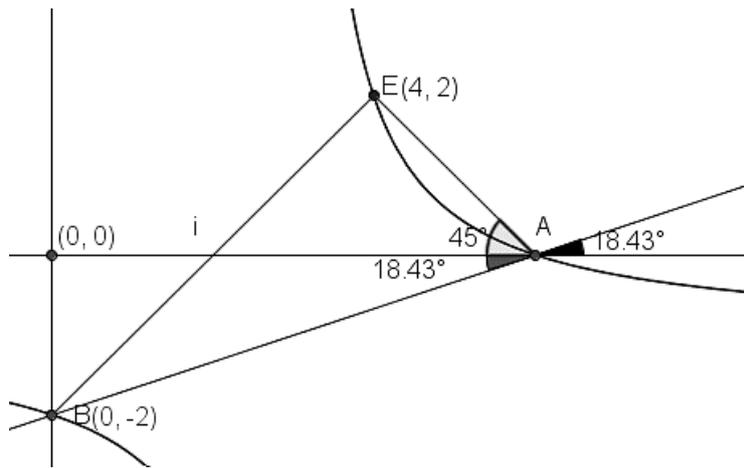| 4.1.1	$T_n = n^2 - 12n + k$ $3132 = (62)^2 - 12(62) + k$ $k = 32$	✓ substitution / *vervanging* ✓ answer / *antwoord* (2)
4.1.2	Terms of the quadratic number pattern: *Terme van die kwadratiese patroon*: $T_1 = (1)^2 - 12(1) + 32 = 21$ $T_2 = (2)^2 - 12(2) + 32 = 12$ $T_3 = (3)^2 - 12(3) + 32 = 5$ Terms of the first difference: *Terme van eerste verskille*: $-9 \quad ; \quad -7 \quad ; \quad -5$	✓ terms of quadratic number pattern / *terme van kwadratiese getalpatroon* ✓ answer / *antwoord* (2)
4.1.3	$T_n = n^2 - 12n + 32$ $n = \dfrac{-(-12)}{2(1)} = 6$	✓ method / *metode* ✓ answer / *antwoord* (2)
4.1.4	$T_{n-1} = (n-1)^2 - 12(n-1) + 32$ $= n^2 - 2n + 1 - 12n + 12 + 32$ $= n^2 - 14n + 45$	✓ simplification / *vereenvoudiging* ✓ answer / *antwoord* (2)

4.1.5	$T_n - T_{n-1} = 149$ $n^2 - 12n + 32 - n^2 + 14n - 45 = 149$ $149 = 2n - 13$ $n = 81$ consecutive terms are 80 and 81 / _opeenvolgende terme is_ 80 _en_ 81 **OR / OF** $T_n = 2n - 11$ $149 = 2n - 11$ $160 = 2n$ $n = 80$ consecutive terms are 80 and 81 / _opeenvolgende terme is_ 80 _en_ 81	✓ $T_n - T_{n-1} = 149$ ✓ simplification / _vereenvoudiging_ ✓ answer / _antwoord_ (3) **OR/OF** ✓ $T_n = 2n - 11$ ✓ equating T_n to 149 ✓ answer / _antwoord_ (3)
4.2	$\quad x \qquad\qquad 4 \qquad\qquad 3x \qquad\qquad 18$ $\qquad 4 - x \qquad\quad 3x - 4 \qquad 18 - 3x$ $\qquad\qquad 4x - 8 \qquad\; -6x + 22$ $4x - 8 = -6x + 22$ $10x = 30$ $x = 3$ $\therefore\; T_3 = 9$	✓ 2nd diff i.t.o x / 2de _versk. i.t.v_ x ✓ equating / _gelykstelling_ ✓ answer / _antwoord_ (3)
		[14]

QUESTION/*VRAAG 5*

5.1	$p = -3$	✓ answer / *antwoord* (1)
5.2	$f(x) = \dfrac{a}{x-3} - 1$ Subst. / *Vervang*: $(4;2)$ $2 = \dfrac{a}{4-3} - 1$ $a = 3$ $f(x) = \dfrac{3}{x-3} - 1$	✓ $f(x) = \dfrac{a}{x-3} - 1$ ✓ substitution of $(4;2)$ / *vervanging van* $(4;2)$ ✓ equation of f / *vergelyking van* f (3)
5.3	$g(x) = \dfrac{x}{3} + c$ $-1 = \dfrac{3}{3} + c$ $c = -2$ $\therefore \mathrm{B}(0\,;-2)$ $0 = \dfrac{x}{3} - 2$ $2 = \dfrac{x}{3}$ $x = 6$ $\therefore \mathrm{A}(6\,;0)$ **OR/*OF*** $f(0) = -2$ $\mathrm{B}(0\,;-2)$ $0 = \dfrac{3}{x-3} - 1$ $1 = \dfrac{3}{x-3}$ $x - 3 = 3$ $x = 6$ $\therefore \; \mathrm{A}(6\,;0)$	 ✓ coordinates of B / *koördinate van* B ✓ $g(x) = 0$ ✓ coordinates of A / *koördinate van* A (3) **OR/*OF*** ✓ coordinates of B / *koördinate van* B ✓ $f(x) = 0$ ✓ coordinates of A / *koördinate van* A (3)

5.4	$-(x-4)+3=0$ $-x+4-3=0$ $-x+1=0$ $x-1=0$ V.A: $x=1$ Domain / *Gebied*: $x \in \mathbf{R}$; $x \neq 1$ **OR / *OF*** $h(x) = \dfrac{3}{-(x-4)-3} - 1$ $= \dfrac{3}{-x+4-3}$ $= \dfrac{3}{-(x-1)} - 1$ $= \dfrac{-3}{x-1} - 1$ Domain / *Gebied*: $x \in \mathbf{R}$; $x \neq 1$	✓ replacing x by $-(x-4)$ *vervang x met* $-(x-4)$ ✓ $x-1=0$ / $x=1$ ✓ answer / *antwoord* (3) **OR/*OF*** ✓ replacing x by $-(x-4)$ *vervang x met* $-(x-4)$ ✓ denominator / *noemer*: $(x-1)$ ✓ answer / *antwoord* (3)
5.5	$x>3$, $x \neq 6$ **OR / *OF*** $3<x<6$ or/*of* $x>6$	✓✓ answer / *antwoord* (2)

5.6.1

$m_{AB} = \dfrac{1}{3}$

$\therefore \theta = 18,43°$

$\therefore B\hat{O}A = 18,43°$ (Vert. opp $\angle$'s / _Regoorstaande $\angle$e_)

$m_{EA} = \dfrac{0-2}{6-4} = -1$

Ref.$\angle$ / _Verwys.._$\angle$: $E\hat{A}O = 45°$

$\therefore E\hat{A}B = 63,43°$

$EA = \sqrt{(4-6)^2 + (2-0)^2}$

$\quad = 2\sqrt{2}$

Area of $\triangle ABE = \dfrac{1}{2} \times EA \times AB \times \sin E\hat{A}B$

$\qquad = \dfrac{1}{2} \times \left(2\sqrt{2}\right) \times \left(2\sqrt{10}\right) \sin 63,43°$

$\qquad = 8\,\text{units}^2 \,/\, eenhede^2$

✓ m_{AB} and/_en_ m_{EA}

✓ Length of EA / _Lengte van_ EA

✓ $18,43°$ and/_en_ $45°$

✓ substitution in the area formula / _vervanging in die oppervlakte formule_

✓ answer / _antwoord_

(5)

[17]

QUESTION/*VRAAG 6*

6.1	$a = -1$	✓ value of *a* / *waarde van a*	
	$x = \dfrac{6}{-2} = -3$	✓ $x = -3$ and / *en* $y = 9$	
	$f(-3) = -(1)^2 - 6(-3) = 9$	✓ equation in T.P-form / *Vergelyking in DP-vorm*	
	$f(x) = -(x+3)^2 + 9$		(3)
	OR / *OF*	**OR/*OF***	
	$f(x) = -x^2 - 6x$	✓ common factor –1 / *gemene faktor* –1	
	$\quad = -(x^2 + 6x)$		
	$\quad = -(x^2 + 6x + (3)^2 - (3)^2)$	✓ completing the square $\pm (3)^2$ / *voltooing van vierkant* $\pm (3)^2$	
	$\quad = -((x+3)^2 - 9)$	✓ equation in T.P-form / *vergelyking in DP-vorm*	
	$\quad = -(x+3)^2 + 9$		
			(3)
6.2	$x_{TP} = -3$	✓ $x = -3$	
	$\dfrac{x_B + x_A}{2} = x_{TP}$		
	$\dfrac{-5 + x_A}{2} = -3$		
	$-6 = -5 + x_A$		
	$x_A = -1$	✓ $x_A = -1$	
	$f(-1) = -(-1)^2 - 6(-1) = 5$	✓ $f(-1)$	
	$\therefore A(-1;5)$		(3)

6.3	$g(x) = x^2 + 6x$	$\checkmark$ $g(x)$
	$CD = g(x) - f(x)$	
	$14 = x^2 + 6x - (-x^2 - 6x)$	$\checkmark$ $g(x) - f(x)$
	$14 = 2x^2 + 12x$	
	$2x^2 + 12x - 14 = 0$	
	$x^2 + 6x - 7 = 0$	$\checkmark$ standard form / *standaardvorm*
	$(x + 7)(x - 1) = 0$	
	$x = -7$ or / *of* $x = 1$	$\checkmark$ both $x-$ values / *beide x-waardes*
	$\therefore x = -7$	
	$\therefore \text{OE} = 7 \text{ units} / \text{eenhede}$	$\checkmark$ answer / *antwoord* (5)
6.4.1	$k < -9$	$\checkmark\checkmark$ answer / *antwoord* (2)
6.4.2	$-x^2 - 6x = 0$	
	$x^2 + 6x = 0$	
	$x(x + 6) = 0$	
	$x = 0$ or / *of* $x = -6$	$\checkmark$ $x-$ values / *x-waardes*
	$\therefore -6 < k < 0$	$\checkmark\checkmark$ answer / *antwoord* (3)
		[16]

QUESTION/*VRAAG 7*

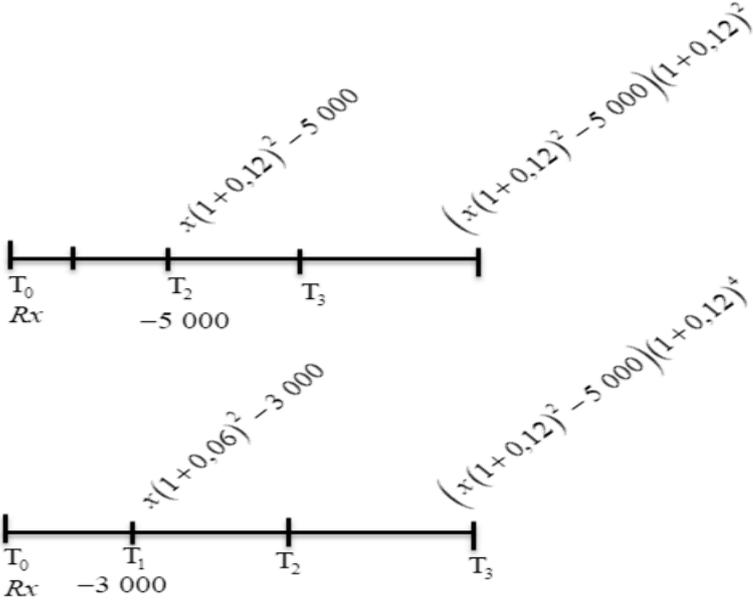|		
7.1.1	$y = -3$	✓ answer / *antwoord* (1)
7.1.2	$\left(\dfrac{1}{3}\right)^{x+1} - 3 = 0$ $3 = \left(\dfrac{1}{3}\right)^{x+1}$ $\left(\dfrac{1}{3}\right)^{-1} = \left(\dfrac{1}{3}\right)^{x+1}$ *OR / OF* $3^1 = 3^{-x-1}$ $x + 1 = -1$ $x = -2$ $y = \left(\dfrac{1}{3}\right)^{0+1} - 3$ $= -\dfrac{8}{3} \approx -2,7$	✓ $f(x) = 0$ ✓ $x = -2$ ✓ $y = -\dfrac{8}{3}$ (3)
7.1.3		✓ shape / *vorm* ✓ x and y intercepts / *x- en y-afsnitte* ✓ asymptote / *asimptoot*
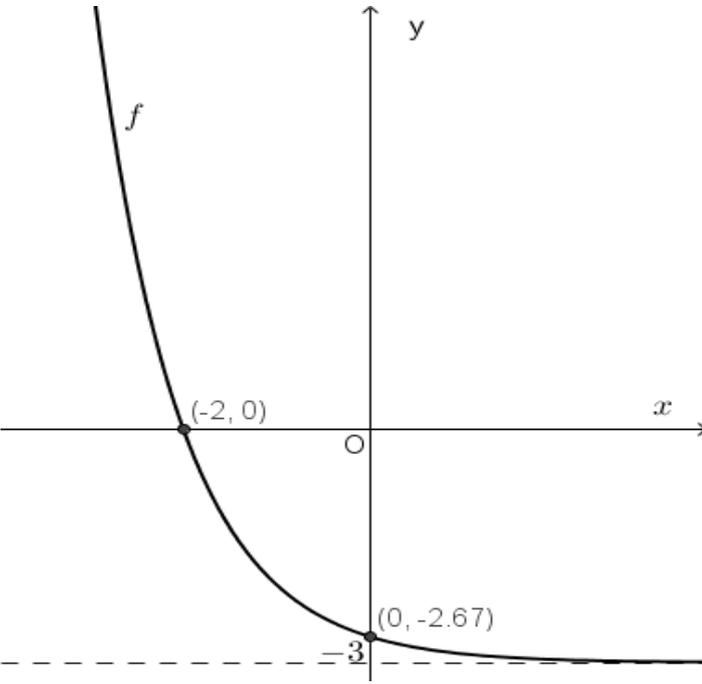
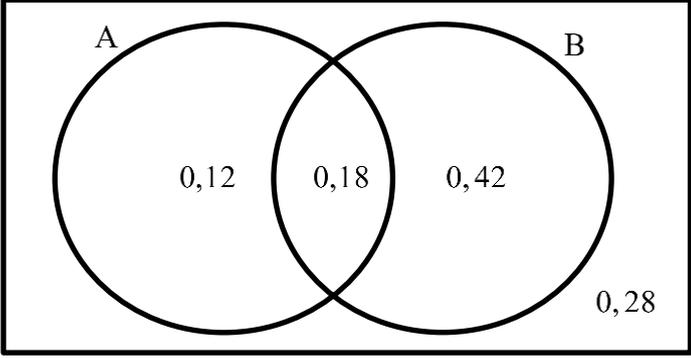| 7.1.4	$x \le -2$	✓✓ answer / *antwoord* (2)
7.2	$y = a.k^x + r$ $y = a.k^x - 2$ Subst./*Vervang*: $(0 \,;\, 0)$ $0 = a.k^0 - 2$ $2 = a$ $6 = 2k^2 - 2$ $8 = 2k^2$ $4 = k^2$ $k = \pm 2$ $\therefore k = 2 \;\; ; k > 0$ $h(x) = 2.2^x - 2$	✓ $y = a.k^x - 2$ ✓ $a = 2$ ✓ substitution of $(2;6)$/ *vervanging van* $(2;6)$ ✓ equation h / *vergelyking h* (4)
		[13]

QUESTION/VRAAG 8

8.1	$A = P(1-i)^n$ $= 250\,000(1-13\%)^6$ $= R108\,406,55$	✓ $i = 6$ ✓ substitution / vervanging ✓ answer / antwoord (3)
8.2	$1 + 7,5\% = \left(1 + \dfrac{i_{nom}}{4}\right)^n$ $\sqrt[4]{\dfrac{43}{40}} = \left(1 + \dfrac{i_{nom}}{4}\right)$ $\sqrt[4]{\dfrac{43}{40}} - 1 = \dfrac{i_{nom}}{4}$ $i_{nom} = 4\left(\sqrt[4]{\dfrac{43}{40}} - 1\right)$ $i_{nom} = 0,07297.....$ $i_{rate} = 7,30\%$	✓ substitution / vervanging ✓ i_{nom} subject of equation / i_{nom} onderwerp van formule ✓ i_{rate} (3)
8.3	$A = \left(25\,000\left(1 + \dfrac{4\%}{12}\right)^{24} + 10\,000\right)\left(1 + \dfrac{7\%}{2}\right)^6 - 5000\left(1 + \dfrac{7\%}{2}\right)^2$ $A = R40\,222,91$ **OR / OF** $A = \left(\left(25\,000\left(1 + \dfrac{4\%}{12}\right)^{24} + 10000\right)\left(1 + \dfrac{7\%}{2}\right)^4 - 5000\right)\left(1 + \dfrac{7\%}{2}\right)^2$ $A = R40\,222,91$	✓ $n = 24$; 6 and / en 2 ✓ $25\,000\left(1 + \dfrac{4\%}{12}\right)^{24}$ ✓ $+10000$ to $25\,000\left(1 + \dfrac{4\%}{12}\right)^{24}$ ✓ subtracting 5000 with its interest / aftrekking van 5000 met rente ✓ answer / antwoord (5) **OR/OF** ✓ $n = 24$; 4 and/en 2 ✓ $25\,000\left(1 + \dfrac{4\%}{12}\right)^{24}$ ✓ $+10000$ to $25\,000\left(1 + \dfrac{4\%}{12}\right)^{24}$ ✓ $P\left(1 + \dfrac{7\%}{2}\right)^2$ ✓ answer / antwoord (5)

8.4	**Option 1 : annual compounding** * Amount after 2 years: $x(1+0,12)^2$ *Brian pays 5 000, leaving : $x(1+0,12)^2 - 5\,000$ *Amount after another 2 years: $\left(x(1+0,12)^2 - 5\,000\right)(1+0,12)^2$ **Option 2 : semi - annual compounding** * Amount after 1 year: $x(1+0,06)^2$ *Brian pays 3 000, leaving : $x(1+0,06)^2 - 3\,000$ *Amount after another 2 years: $\left(x(1+0,06)^2 - 3\,000\right)(1+0,06)^4$ **Times lines for both options** 	✓ $x(1+0,12)^2 - 5\,000$ and/en $x(1+0,06)^2 - 3\,000$ ✓ $\left(x(1+0,12)^2 - 5\,000\right)(1+0,12)^2$ ✓ $\left(x(1+0,06)^2 - 3\,000\right)(1+0,06)^4$
	$\left(x(1+0,12)^2 - 5000\right)(1+0,12)^2 = \left(x(1+0,06)^2 - 3000\right)(1+0,06)^4$ $\left(x(1,12)^2 - 5000\right)(1,12)^2 = \left(x(1,06)^2 - 3000\right)(1,06)^4$ $x(1.12)^4 - 5000(1,12)^2 = x(1,06)^6 - 3000(1,06)^4$ $-5000(1,12)^2 + 3000(1,06)^4 = x(1,06)^6 - x(1,12)^4$ $-2484,56912 = -0,1550002477x$ $x = R16\,029,45$	✓ equating both options / *gelykstel van opsies* ✓ distribution by / *uitbreiding* $(1,12)^2$ and / *en* $(1,06)^2$ ✓ answer /*antwoord* (6)
		[17]

Opsie 1 : jaarliks saamgestel

* Bedrag na 2 jaar: $x(1+0,12)^2$

*Brian betaal 5 000, dit laat: $x(1+0,12)^2 - 5\ 000$

*Bedrag na 'n verdere 2 jaar: $\left(x(1+0,12)^2 - 5\ 000\right)(1+0,12)^2$

Opsie 2 : half - jaarliks saamgestel

* Bedrag na 1 jaar: $x(1+0,06)^2$

*Brian betaal 3 000, dit laat : $x(1+0,06)^2 - 3\ 000$

*Bedrag na 'n verdere 2 jaar: $\left(x(1+0,06)^2 - 3\ 000\right)(1+0,06)^4$

Tydlyne vir beide opsies:

✓ $x(1+0,12)^2 - 5\ 000$
and/en $x(1+0,06)^2 - 3\ 000$
✓ $\left(x(1+0,12)^2 - 5\ 000\right)(1+0,12)^2$
✓ $\left(x(1+0,06)^2 - 3\ 000\right)(1+0,06)^4$

$\left(x(1+0,12)^2 - 5000\right)(1+0,12)^2 = \left(x(1+0,06)^2 - 3000\right)(1+0,06)^4$

$\left(x(1,12)^2 - 5000\right)(1,12)^2 = \left(x(1,06)^2 - 3000\right)(1,06)^4$

$x(1.12)^4 - 5000(1,12)^2 = x(1,06)^6 - 3000(1,06)^4$

$-5000(1,12)^2 + 3000(1,06)^4 = x(1,06)^6 - x(1,12)^4$

$-2484,56912 = -0,1550002477x$

$x = R16\ 029,45$

✓ equating both options /
gelykstel van opsies

✓ distribution by / *uitbreiding*
$(1,12)^2$ and / *en* $(1,06)^2$

✓ answer /*antwoord*

(6)

[17]

QUESTION/*VRAAG 9*

9.1.1	NO / *NEE* $P(A) \times P(B) = 0,3 \times 0,6$ $\qquad\qquad = 0,18$ $\therefore P(A \text{ and } / \textit{en } B) = 0,18 \neq 0$	✓ NO / *NEE* ✓ valid reason / *geldige rede* (2)
9.1.2		✓ 0,18 ✓ 0,12 and/*en* 0,42 ✓ 0,28 (3)
9.1.3	$P(\text{not A and not B}) = P\big[\text{not}(A \text{ or } B)\big] = 0,28$ $P(\textit{nie A en nie B}) = [\textit{nie}(A \textit{ of } B)] = 0,28$	✓✓ answer / *antwoord* (2)
9.2.1	$\dfrac{42}{106} = \dfrac{21}{53}$	✓ answer / *antwoord* (1)
9.2.2	$P(\text{Enjoy jogging/Geniet draf}) = \dfrac{56}{106}$ $\qquad P(\text{Male/Manlik}) = \dfrac{42}{106}$ $P(\text{Enjoy jogging/Geniet draf}) \times P(\text{Male/Manlik}) = \dfrac{56}{106} \times \dfrac{42}{106}$ $\qquad\qquad\qquad = 0,20932...$ $P(\text{Enjoy jogging and Male/Geniet draf en Manlik}) = \dfrac{26}{106}$ $\qquad\qquad\qquad = 0,24528...$ $\therefore P(\text{Enjoy jogging and Male/Geniet draf en Manlik})$ $\neq P(\text{Enjoy jogging/Geniet draf}) \times P(\text{Male/Manlik})$ $\therefore$ Events are not independent. / Gebeurtenisse is nie *onafhanklik nie.*	✓ $P(\text{Enjoy jogging}) \times P(\text{Male})$ / $P(\text{Geniet draf}) \times P(\text{Manlik})$ ✓ answer / antwoord ✓ $P(\text{Enjoy jogging and Male})$ / $P(\text{Geniet draf en Manlik})$ ✓ conclusion / slotsom (4)

9.3.1		
	Sunny / Sonnig - S Not Sunny / Nie Sonnig nie - S′ Use Sunscreen / Gebruik Sonskerm - U Not using Sunscreen / Gebruik nie sonskerm nie - U′ 	✓ First branches i.e. S and S′ / Eerste takke dws S en S′ ✓ Second branches i.e. U and U′ / Tweede takke dws U en U′ ✓ outcomes / uitkomste (3)
9.3.2	$0,7x + 0,06x = 0,62$ $0,76x = 0,62$ $x = 0,82$	✓ $0,7x + 0,06x$ ✓ $= 0,62$ ✓ answer / *antwoord* (3)
		[18]
		TOTAL / *TOTAAL*: **150**