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Province of the
EASTERN CAPE
EDUCATION

NATIONAL
SENIOR CERTIFICATE/
NASIONALE
SENIOR SERTIFIKAAT

GRADE/*GRAAD* 11

NOVEMBER 2020

MATHEMATICS P1/*WISKUNDE V1*
MARKING GUIDELINE/*NASIENRIGLYN*
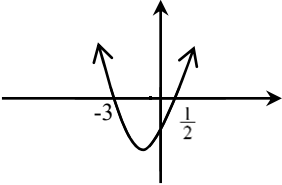# EXEMPLAR*/EKSEMPLAAR*

MARKS/*PUNTE*: 150

This marking guideline consists of 15 pages./
Hierdie nasienriglyn bestaan uit 15 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 1/*VRAAG 1*

1.1.1	$(3x+2)(x-5)=0$ $\therefore x = -\dfrac{2}{3}$ or / *of* $x = 5$	✓ ✓ answers / *antwoorde* (2)
1.1.2	$3x^2 - 5x - 1 = 0$ $\therefore x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $= \dfrac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(-1)}}{2(3)}$ $= \dfrac{5 \pm \sqrt{37}}{6}$ $= -0,18$ or / *of* $1,85$	✓ substitution / *vervanging* ✓ ✓ answers / *antwoorde* (3)
1.1.3	$x = 4 - \sqrt{x-2}$ $\sqrt{x-2} = 4 - x$ $(x-2) = (4-x)^2$ $x - 2 = 16 - 8x + x^2$ $x^2 - 9x + 18 = 0$ $(x-6)(x-3) = 0$ $\therefore x = 3$ or / *of* $x \neq 6$	✓ squaring both sides/ *kwadreer beide kante* ✓ standard form / *standaardvorm* ✓ factors / *faktore* ✓ both *x*-values / *beide x-waardes* ✓ selection / *keuse* (5)
1.1.4	$2x^2 + 5x \leq 3$ $2x^2 + 5x - 3 \leq 0$ $(2x-1)(x+3) \leq 0$ $\therefore -3 \leq x \leq \dfrac{1}{2}$ 	✓ standard form / *standaardvorm* ✓ factors / *faktore* ✓ ✓ $-3 \leq x \leq \dfrac{1}{2}$ (4)

1.2.1	$\left(\dfrac{8}{27}\right)^{\frac{2}{3}} = \left(\sqrt[3]{\dfrac{8}{27}}\right)^2$	$\checkmark \left(\sqrt[3]{\dfrac{8}{27}}\right)^2$	
	$\qquad = \left(\dfrac{2}{3}\right)^2$		
	$\qquad = \dfrac{4}{9}$	$\checkmark$ answer / *antwoord*	(2)
	OR/OF	**OR/OF**	
	$\left[\left(\dfrac{2}{3}\right)^3\right]^{\frac{2}{3}}$	$\checkmark \left[\left(\dfrac{2}{3}\right)^3\right]^{\frac{2}{3}}$	
	$= \left(\dfrac{2}{3}\right)^2$		
	$= \dfrac{4}{9}$	$\checkmark$ answer / *antwoord*	(2)
1.2.2	$\left(\sqrt{12}+2\right)\left(\sqrt{3}-1\right) = \left(2\sqrt{3}+2\right)\left(\sqrt{3}-1\right)$	$\checkmark\ 2\sqrt{3}$	
	$\qquad = 2.3 - 2\sqrt{3} + 2\sqrt{3} - 2$	$\checkmark\ 4.3 - 2\sqrt{3} + 2\sqrt{3} - 2$	
	$\qquad = 6 - 2$	$\checkmark$ answer / *antwoord*	
	$\qquad = 4$		(3)
	OR/OF	**OR/OF**	
	$\left(\sqrt{12}+2\right)\left(\sqrt{3}-1\right) = \sqrt{36} - \sqrt{12} + 2\sqrt{3} - 2$	$\checkmark\ \sqrt{36}$	
	$\qquad = 6 - 2\sqrt{3} + 2\sqrt{3} - 2$	$\checkmark\ 6 - 2\sqrt{3} + 2\sqrt{3} - 2$	
	$\qquad = 4$	$\checkmark$ answer / *antwoord*	(3)

| 1.3 | $5y - x = 2$ (1)
 $x^2 - 3xy + 4y = 4$ (2)
 $x = 5y - 2$ (3)
 Subst. / *Vervang* (3) into/*in* (2):
 $\therefore (5y-2)^2 - 3y(5y-2) + 4y - 4 = 0$
 $\quad 25y^2 - 20y + 4 - 15y^2 + 6y + 4y - 4 = 0$
 $\quad 10y^2 - 10y = 0$
 $\quad 10y(y-1) = 0$
 $\quad \therefore y = 0 \qquad$ or / *of* $\qquad y = 1$
 $x = 5y - 2$
 $\quad x = 5(0) - 2 \quad$ or / *of* $\quad x = 5(1) - 2$
 $\therefore x = -2 \qquad$ or / *of* $\qquad x = 3$

 OR / *OF*
 $5y - x = 2$ (1)
 $x^2 - 3xy + 4y = 4$ (2)
 $y = \dfrac{x+2}{5} = \dfrac{1}{5}(x+2)$ (3)
 Subst./*Vervang* (3) into/*in* (2),
 $x^2 - 3x\left(\frac{1}{5}(x+2)\right) + 4\left(\frac{1}{5}(x+2)\right) = 4$
 $x^2 - \frac{3}{5}x(x+2) + \frac{4}{5}(x+2) = 4$
 $5x^2 - 3x^2 - 6x + 4x + 8 - 20 = 0$
 $2x^2 - 2x - 12 = 0$
 $x^2 - x - 6 = 0$
 $(x-3)(x+2) = 0$
 $\therefore x = -2 \qquad$ or / *of* $\qquad x = 3$
 $y = \frac{1}{5}(-2+2) \quad$ or / *of* $\quad y = \frac{1}{5}(3+2)$
 $\therefore y = 0 \qquad$ or / *of* $\qquad y = 1$ | ✓ $x = 5x - 2$

 ✓ substitution / *vervanging*

 ✓ standard form / *standaardvorm*
 ✓ method;factors / *metode;faktore*
 ✓ both x-values / *beide x-waardes*

 ✓ both y-values / *beide y-waardes*
                  (6)

 ✓ $y = \frac{1}{5}(x+2)$

 ✓ substitution / *vervanging*

 ✓ standard form / *standaardvorm*

 ✓ factors / *faktore*
 ✓ both y-values / *beide y-waardes*

 ✓ both x-values / *beide x-waardes*
                  (6) |
| 1.4.1 | Perimeter/*Omtrek* $= 2l + 2b$
 $\qquad 280 = 2(2x) + 2y$
 $\qquad 2y = 280 - 4x$
 $\qquad \therefore y = 140 - 2x$

 Area/*Oppervlakte* $= lb$
 $\qquad = 2x \times y$
 $\qquad = 2x(140 - 2x)$
 $\qquad = 280x - 4x^2$ | ✓ substitution / *vervanging*

 ✓ simplification / *vereenvoudiging*

 ✓ $A = 2x(140 - 2x)$

                  (3) |

1.4.2	$A = 280x - 4x^2$		
	$= -4(x^2 - 70x)$		
	$= -4(x^2 - 70x + 1225 - 1225)$	✓ completing the square / *vierkantsvoltooiing*	
	$= -4[(x - 35)^2 - 1225]$		
	$= -4(x - 35)^2 + 4900$	✓ +4900	
	$\therefore$ The maximum area is $4900\,m^2$	✓ correct conclusion / *korrekte gevolgtrekking*	
	Die maksimum oppervlakte is $4900\,m^2$		(3)
	OR/OF	**OR/OF**	
	$x = -\dfrac{b}{2a}$	✓ method/*metode*	
	$= \dfrac{-280}{2(-4)}$	✓ 35 m	
	$= 35\,m$		
	$\therefore A = 280(35) - 4(35)$	✓ answer / *antwoord*	(3)
	$= 4900\,m^2$		**[31]**

QUESTION 2/VRAAG 2

2.1	$\dfrac{3.2^{x+1} - 2.4^x}{3.2^x - 2^{2x}} = \dfrac{3.2^x.2 - 2.2^{2x}}{3.2^x - 2^{2x}}$	✓ $3.2^x.2 - 2.2^{2x}$	
	$\qquad\qquad\quad = \dfrac{2.2^x(3 - 2^x)}{2^x(3 - 2^x)}$	✓ factorisation of numerator / *faktorisering van teller* ✓ factorisation of denominator / *faktorisering van noemer*	
	$\qquad\qquad\quad = 2$	✓ answer / *antwoord*	
			(4)
2.2.1	$5x^{\frac{2}{5}} = 20$		
	$x^{\frac{2}{5}} = 4$	✓ $x^{\frac{2}{5}} = 4$	
	$\left(x^{\frac{2}{5}}\right)^{\frac{5}{2}} = 4$	✓ $\left(x^{\frac{2}{5}}\right)^{\frac{5}{2}} = 4^{\frac{5}{2}}$	
	$\therefore x = \left(2^2\right)^{\frac{5}{2}}$		
	$\quad = 2^5$		
	$\quad = 32$	✓ answer / *antwoord*	
			(3)

2.2.2	$12^x.3^{x+1} = 648$	
	$12^x.3^x.3 = 648$	✓ $12^x.3^x = 216$
	$12^x.3^x = 216$	
	$(12.3)^x = 216$	
	$36^x = 216$	✓ $6^{2x} = 6^3$
	$6^{2x} = 6^3$	✓ equating exponents / *gelykstel van eksponente*
	$2x = 3$	
	$x = \dfrac{3}{2}$	✓ answer / *antwoord*
		(4)
2.3	$f(x) = \dfrac{3x-2}{x^2+10x+25}$	
		✓ $x^2+10x+25 = 0$ for undefined / *vir ongedefinieerd*
	f is undefined when : f *is ongedefinieerd wanneer*	
	$x^2 + 10x + 25 = 0$	
	$(x+5)^2 = 0$	
	$x = -5$	✓ $x = -5$
	$\therefore f$ is defined *for* : $x \in \square$, but $x \neq -5$	✓ $x \in \mathbb{R}$ ✓ $x \neq -5$
	f *is gedefinieerd vir* : $x \in \square$, *maar* $x \neq -5$	(4)
		[15]
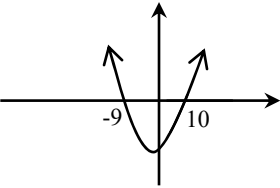
QUESTION 3/*VRAAG 3*

3.1.1	$9 ; 5 ; 1; \ldots ; -143$	
	$T_n = 13 - 4n$	✓ 13 ✓ $-4n$
		(2)
3.1.2	$T_n = 13 - 4n$	
	$T_7 = 13 - 4(7)$	✓ substitution / *vervanging*
	$= -15$	✓ -15
		(2)
3.1.3	$T_n = 13 - 4n$	
	$-143 = 13 - 4n$	✓ substitution / *vervanging*
	$-156 = -4n$	
	$\therefore n = 39$	✓ answer / *antwoord*
		(2)

3.2	$T_n = an + b$	
	$16a + b = 38 \qquad (1)$	✓ $16a + b = 38$ and/*en* $41a + b = 113$
	$\underline{41a + b = 113} \qquad (2)$	
	$25a = 75$	✓ method / *metode*
	$\therefore a = 3$	
	$16(3) + b = 38$	✓ $T_n = 3n - 10$
	$48 + b = 38$	
	$\therefore b = -10$	
	$T_n = 3n - 10$	✓ $n = 3$
	$-1 = 3n - 10$	
	$9 = 3n$	
	$\therefore n = 3$	(4)
		[10]

QUESTION 4/*VRAAG 4*

4.1	$-12 \quad ; \quad -8 \quad ; \quad 0 \quad ; \quad 12$	
	$\begin{array}{ccc} 4 & 8 & 12 \\ & 4 & 4 \end{array}$	✓ 28 ✓ 48
	$28 \;;\; 48$	(2)
4.2	$2a = 4 \qquad 3a + b = 4 \qquad a + b + c = -12$	✓ $a = 2$
	$\therefore a = 2 \qquad 3(2) + b = 4 \qquad 2 - 2 + c = -12$	✓ $b = -2$
	$\qquad\qquad\quad b = -2 \qquad\qquad\quad c = -12$	✓ $c = -12$
		✓ $T_n = 2n^2 - 2n - 12$
	$\therefore T_n = 2n^2 - 2n - 12$	(4)
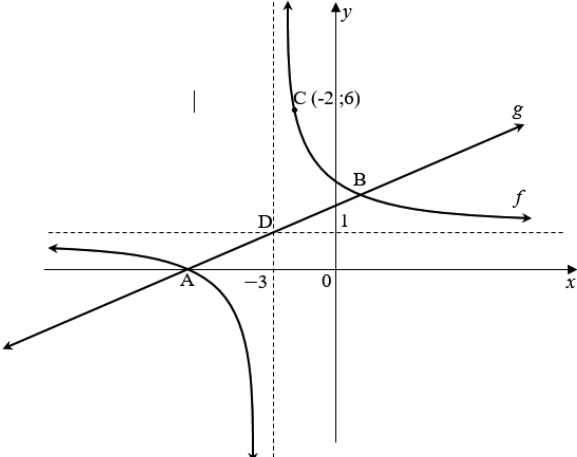
4.3	For first differences: / *Vir eerste verskille* $4; 8; 12; ...$ $\qquad\qquad T_n = 4n$ $\qquad\qquad 192 = 4n$ $\qquad\qquad \therefore n = 48$ $\qquad \therefore 192 \text{ lies between } T_{48} \text{ and } T_{49}$ $\qquad 192 \text{ } l\hat{e} \text{ tussen } T_{48} \text{ en } T_{49}$ **OR/*OF*** $T_{n+1} - T_n = 192$ $2(n+1)^2 - 2(n+1) - 12 - (2n^2 - 2n - 12) = 192$ $2(n^2 + 2n + 1) - 2n - 2 - 12 - 2n^2 + 2n + 12 = 192$ $2n^2 + 4n + 2 - 2n - 2 - 12 - 2n^2 + 2n + 12 = 192$ $\therefore 4n = 192$ $\qquad n = 48$ $\therefore 192 \text{ lies between } T_{48} \text{ and } T_{49}$ $\qquad 192 \text{ } l\hat{e} \text{ tussen } T_{48} \text{ en } T_{49}$	✓ $T_n = 4n$ ✓ $n = 48$ ✓ answer / *antwoord* (3) **OR/*OF*** ✓ $2(n+1)^2 - 2(n+1) - 12 - (2n^2 - 2n - 12) = 192$ ✓ $4n = 192$ ✓ answer / *antwoord* (3)	
4.4	$P_n < 0 \Rightarrow T_n - 168 < 0$ $T_n < 168$ $2n^2 - 2n - 12 < 168$ $2n^2 - 2n - 180 < 0$ $n^2 - n - 90 < 0$ $(n - 10)(n + 9) < 0$ $-9 < n < 10$ but / *maar*: $n > 0$ $\therefore$ Number of terms $= 9$ $\qquad$ *Aantal terme* $= 9$	✓ $2n^2 - 2n - 12 < 168$ ✓ standard form / *standaardvorm* ✓ factorisation / *faktorisering* ✓ $-9 < n < 10$ ✓ answer / *antwoord* (5)	
4.5	$T_n = 2n^2 - 2n - 12$ $\qquad = 2(n^2 - n - 6)$ $\therefore 2 \times$ any $n > 0$ is always even, so T_n will always be even $\qquad 2 \times$ *enige* $n > 0$ *is altyd ewe, so* T_n *sal altyd ewe wees.*	✓ $T_n = 2(n^2 - n - 6)$ ✓ explanation / *verduideliking* (2) **[16]**	

QUESTION 5/VRAAG 5

5.1	At TP/*By Draaipunt*: $x = -\dfrac{b}{2a}$ $= -\dfrac{6}{2(-1)}$ $= 3$ $\therefore y = -(3)^2 + 6(3) + 7$ $= 16$ **OR/OF** $f(x) = -x^2 + 6x + 7$ $= -(x^2 - 6x - 7)$ $= -[(x^2 - 6x + 9) - 9 - 7]$ $= -[(x-3)^2 - 16]$ $= -(x-3)^2 + 16$ $\therefore$ Turning point / *Draaipunt* : $(3;16)$	✓ method / *metode* ✓ x-coordinate / *x-koördinaat* ✓ y-coordinate / *y-koördinaat* (3) ✓ completing the square / *vierkantsvoltooiing* ✓ x-coordinate / *x-koördinaat* ✓ y-coordinate / *y-koördinaat* (3)
5.2	$-x^2 + 6x + 7 = 0$ $x^2 - 6x - 7 = 0$ $(x-7)(x+1) = 0$ $\therefore x = 7$ or / *of* $x = -1$	✓ $f(x) = 0$ ✓ answers / *antwoorde* (2)
5.3		✓ y-intercept / *y-afsnit* ✓ x-intercepts / *x-afsnitte* ✓ turning point / *draaipunt* ✓ shape / *vorm* (4)
5.4	$x = 3$	✓ answer / *antwoord* (1)

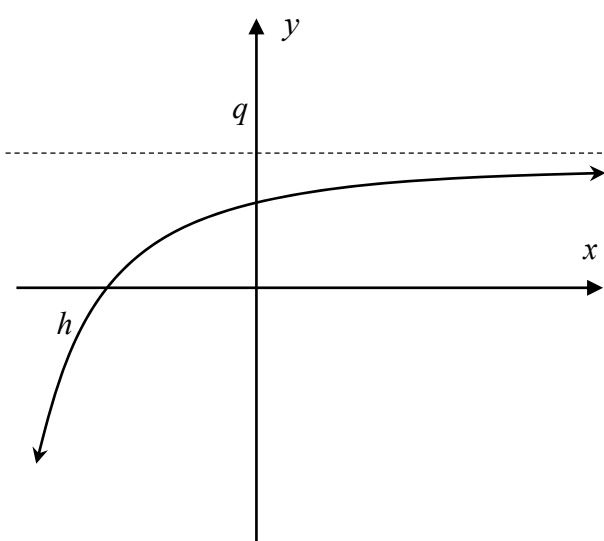| 5.5	$$f(x) = -x^2 + 6x + 7$$ $$f(-3) = -(-3)^2 + 6(-3) + 7$$ $$= -20$$ $$f(1) = -(1)^2 + 6(1) + 7$$ $$= 12$$ Average/*Gemiddelde* $m = \dfrac{12 - (-20)}{1 - (-3)}$ $$= \dfrac{32}{4}$$ $$= 8$$	✓ $f(-3) = -20$ ✓ $f(1) = 12$ ✓ substituting into gradient formula / *vervanging in gradiënt-formule* ✓ answer / *antwoord* (4)
5.6	$$f(x) = -x^2 + 6x + 7$$ $$= -(x-3)^2 + 16$$ $$\therefore h(x) = ((x-3)+4)^2 - 16$$ $$= (x+1)^2 - 16$$	✓ $a = 1$ and/*en* $q = -16$ ✓ $p = 1$ (2) **[16]**

QUESTION 6/*VRAAG 6*

6.1	$f(x) = \dfrac{a}{x+p} + q$ $= \dfrac{a}{x+3} + 1$	✓ $p = 3$ ✓ $q = 1$ (2)
6.2	$f(x) = \dfrac{a}{x+3} + 1$ $6 = \dfrac{a}{-2+3} + 1$ $\therefore a = 5$	✓ substitution / *vervanging* ✓ answer / *antwoord* (2)

6.3	$f(x) = \dfrac{5}{x+3} + 1$	✓ $y = 0$
	$0 = \dfrac{5}{x+3} + 1$	
	$-1 = \dfrac{5}{x+3}$	✓ $x = -8$
	$-x - 3 = 5$	
	$x = -8$	
	$\therefore A(-8;0)$	(2)
6.4	A$(-8;0)$ and/*en* D$(-3;1)$	
	$m_{AD} = \dfrac{y_2 - y_1}{x_2 - x_1}$	
	$= \dfrac{1-0}{-3-(-8)}$	✓ substitution / *vervanging*
	$\therefore b = \dfrac{1}{5}$	✓ m_{AD}
	$g(x) = bx + c$	
	$= \dfrac{1}{5}x + c$	✓ substitution / *vervanging*
	$0 = \dfrac{1}{5}(-8) + c$ or / *of* $1 = \dfrac{1}{5}(-3) + c$	
	$\therefore c = \dfrac{8}{5}$	✓ equation / *vergelyking*
	$g(x) = \dfrac{1}{5}x + \dfrac{8}{5}$	(4)
6.5	$x \in (-\infty; \infty)$ but / *maar* $x \neq -3$	✓ $x \in (-\infty; \infty)$ ✓ $x \neq -3$
	OR / OF	(2)
	$x \in \mathbb{R},\ x \neq -3$	✓ $x \in \mathbb{R}$ ✓ $x \neq -3$
		(2)
6.6	$f(x) = g(x)$	
	$\dfrac{5}{x+3} + 1 = \dfrac{1}{5}x + \dfrac{8}{5}$	✓ $\dfrac{5}{x+3} + 1 = \dfrac{1}{5}x + \dfrac{8}{5}$
	$25 + 5(x+3) = x(x+3) + 8(x+3)$	
	$25 + 5x + 15 = x^2 + 3x + 8x + 24$	✓ standard form / *standaardvorm*
	$x^2 + 6x - 16 = 0$	
	$(x+8)(x-2) = 0$	✓ x-values / *x-waardes*
	$x = -8\ \ or\ \ x = 2$	
	$y = \dfrac{5}{2+3} + 1$	✓ coordinates / *koördinate*
	$= 2$	
	$\therefore B(2;2)$	(4)

6.7	$-8 \le x < -3$ or $x \ge 0$ **OR / OF** $x \in \left[[-8;-3) \cup [0;\infty)\right]$	$\checkmark\checkmark$ $-8 \le x < -3$ $\checkmark$ $x \ge 0$ **OR / OF** $x \in \left[[-8;\ -3)\ \checkmark\checkmark\ \cup\ [0;\infty)\right]$ $\checkmark$ (3) **[19]**
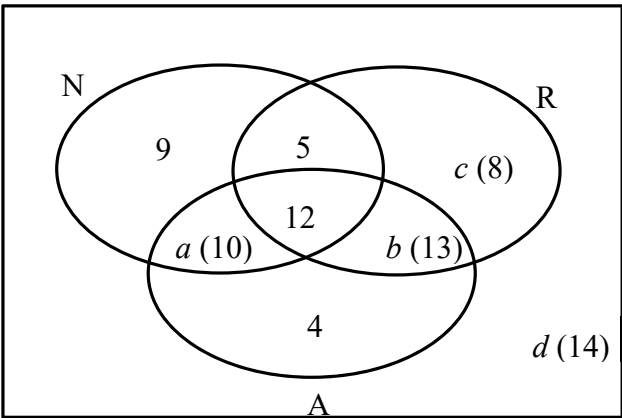
QUESTION 7/*VRAAG 7*

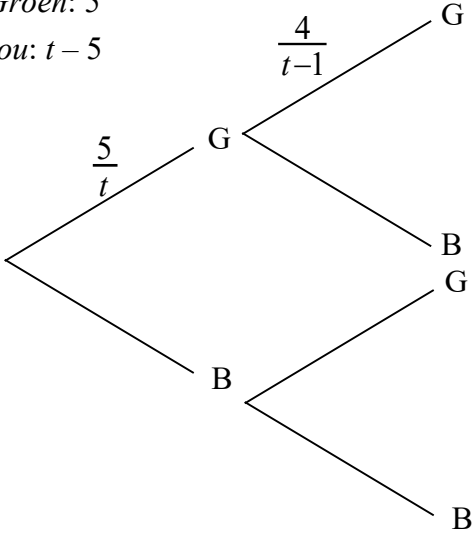| 7.1.1	$y = -4$	$\checkmark$ answer / *antwoord* (1)
7.1.2	$y \in (-4;\infty)$ **OR / OF** $y > -4$	$\checkmark$ answer / *antwoord* (1) **OR / OF** $\checkmark$ answer / *antwoord* (1)
7.1.3	$$g(x) = \left(\frac{1}{2}\right)^{x} - 4$$ $$y = \left(\frac{1}{2}\right)^{0} - 4$$ $$= -3$$ $$0 = \left(\frac{1}{2}\right)^{x} - 4$$ $$4 = \left(2^{-1}\right)^{x}$$ $$2^{2} = 2^{-x}$$ $$\therefore 2 = -x$$ $$x = -2$$ Intercepts / *Afsnitte* : $(0;-3)$ and / *en* $(-2;0)$	$\checkmark$ y-value / *y-waarde* $\checkmark$ substitution / *vervanging* $\checkmark$ answer / *antwoord* (3)
7.1.4	$x > -2$	$\checkmark$ answer / *antwoord* (1)

7.2		$\checkmark$ asymptote above x-axis
		    asimptoot bo x-as
		 $\checkmark$ y-intercept positive
		    y-afsnit positief
		 $\checkmark$ shape / *vorm*
		
		 (3)
		 [9]

QUESTION 8/*VRAAG 8*

8.1	$i_{eff} = \left(1 + \dfrac{i_{nom}}{m}\right)^m - 1$ $= \left(1 + \dfrac{0.095}{12}\right)^{12} - 1$ $= 0,099247\ldots$ $\therefore r = 9,92\%$	✓ formula / *formule* ✓ substitution / *vervanging* ✓ answer / *antwoord* (3)
8.2	$A = P(1+i)^n$ $R\,764\,050,60 = P(1+0,08)^5$ $P = \dfrac{764050\,.60}{(1+0.08)^5}$ $= R\,520\,000$	✓ $A = R764050,60$ ✓ substitution / *vervanging* ✓ answer / *antwoord* (3)
8.3.1	$A = \left[28\,000\left(1 + \dfrac{0,075}{12}\right)^{48} - R\,7\,300\right]\left(1 + \dfrac{0,11}{4}\right)^{12}$ $= (R\,37\,760,78 - R\,7\,300)\left(1 + \dfrac{0,11}{4}\right)^{12}$ $= R\,30\,460,78\left(1 + \dfrac{0,11}{4}\right)^{12}$ $= R\,42\,181,59$	✓ $28000\left(1 + \dfrac{0,075}{12}\right)^{48}$ ✓ $-R7\,300$ ✓ $\times\left(1 + \dfrac{0,11}{4}\right)^{12}$ ✓ simplification / *vereenvoudiging* ✓ answer / *antwoord* (5)
8.3.2	$A = P(1+i)^n$ $A = R\,42\,181,59\left(1 + \dfrac{0,08}{12}\right)^{60}$ $= R\,62\,844,06$ $R\,80\,000 - R\,62\,844,06$ $= R\,17\,155,94$ $\therefore A = P(1+i)^n$ $R\,17\,155,94 = P\left(1 + \dfrac{0,08}{12}\right)^{60}$ $P = \dfrac{17155,94}{\left(1 + \dfrac{0,08}{12}\right)^{60}}$ $= R\,11\,515,25$ $\therefore$ He needs to deposit R11 515 / *Hy moet* R11 515 *deponeer*	✓ substitution into correct formula *vervanging in korrekte formule* ✓ R62 844,06 ✓ R17 155,964 ✓ method / *metode* ✓ answer / *antwoord* (5) **[16]**

QUESTION 9/*VRAAG 9*

9.1	If A and B are independent, then:
	 As A en B onafhanklik is, dan:
	 P(A and/*en* B) = P(A) × P(B)
	
	 P(A) = 1 − P(not/*nie* A)
	      = 1 − 0,45
	      = 0,55
	      $= \dfrac{11}{20}$
	 P(A or/*of* B) = P(A) + P(B) − P(A and/*en* B)
	    0,685 = 0,55 + 0,3 − P(A and/*en* B)
	    ∴P(A and/*en* B) = 0,165
	              $= \dfrac{33}{200}$
	
	 P(A) × P(B) = 0,55 × 0,3
	            = 0,165
	            $= \dfrac{33}{200}$
	 ∴ A and B are independent events. /
	    A *en* B *is onafhanklike gebeurtenisse.*
		
		 ✓ 0,55
		
		 ✓ substitution / *vervanging*
		
		 ✓ answer / *antwoord*
		
		 ✓ P(A) × P(B)
		
		 ✓ conclusion / *gevolgtrekking*
		
		 (5)	

9.2.1	 *a* = 10 ; *b* = 13 ; *c* = 8 ; *d* = 14	✓ *a* = 10 ✓ *b* =13 ✓ *c* = 8 ✓ *d* =14 (4)	

9.2.2	$P\left(A \text{ or/}of (N \text{ and/}en \text{ R})\right) = \dfrac{39}{75} + \dfrac{5}{75}$
	                           $= \dfrac{44}{75}$
	                           ≈ 0,59
		✓ $\dfrac{39}{75}$ ✓ $+\dfrac{5}{75}$
		
		 ✓ answer / *antwoord*
		
		 (3)
		 [12]	

QUESTION 10/*VRAAG 10*

| 10 | Let the total number of balls be t.
 Laat die totale aantal balle t wees.

 Green/*Groen*: 5
 Blue/*Blou*: $t - 5$

 $P(GG) = P(G) \times P(G)$
 $\dfrac{5}{t} \times \dfrac{4}{t-1} = \dfrac{5}{18}$

 $\dfrac{20}{t(t-1)} = \dfrac{5}{18}$

 $5t^2 - 5t = 360$
 $5t^2 - 5t - 360 = 0$
 $t^2 - t - 72 = 0$
 $(t-9)(t+8) = 0$
 $\therefore t = 9 \ or \ t \neq -8$
 $\therefore$ There are 9 balls.
 $\quad$ *Daar is 9 balle.* | $\checkmark \dfrac{5}{t}$ $\checkmark$ and/*en* $\dfrac{4}{t-1}$

 $\checkmark$ equation / *vergelyking*

 $\checkmark$ standard form / *standaardvorm*

 $\checkmark$ factorisation / *faktorisering*

 $\checkmark \ t = 9$

 (6) |

TOTAL / TOTAAL: 150