basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE/ *NASIONALE SENIOR SERTIFIKAAT*

GRADE/*GRAAD* 11

MATHEMATICS P1/*WISKUNDE V1*

NOVEMBER 2017

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

These marking guidelines consist of 19 pages.
Hierdie nasienriglyne bestaan uit* 19 *bladsye.

Govender
12/11/2017

WLWhite
12/11/2017

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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 om waardes/antwoorde te veronderstel om 'n probleem op te los.*

QUESTION/*VRAAG* 1

1.1.1	$(2x-3)(x+7)=0$ $x=\frac{3}{2}$ or $x=-7$	✓ $x=\frac{3}{2}$ ✓ $x=-7$ (2)
1.1.2	$7x^2+3x-2=0$ $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ $=\frac{-(3)\pm\sqrt{(3)^2-4(7)(-2)}}{2(7)}$ $=\frac{-3\pm\sqrt{65}}{14}$ $x=-0,79$ or $x=0,36$ **NOTE/*LET WEL*:** Penalty 1 mark for incorrect rounding *Penalisering 1 punt vir verkeerde afronding* **OR/ OF** $x^2+\frac{3}{7}x-\frac{2}{7}=0$ $x^2+\frac{3}{7}x-\frac{9}{196}=\frac{2}{7}+\frac{9}{196}$ $\left(x+\frac{3}{14}\right)^2=\frac{65}{196}$ $x+\frac{3}{14}=\frac{\pm\sqrt{65}}{14}$ $x=\frac{-3\pm\sqrt{65}}{14}$ $x=-0,79$ or $x=0,36$	✓substitution/*vervanging* ✓answer/*antwoord* ✓answer/*antwoord* ✓ $\left(x+\frac{3}{14}\right)^2=\frac{65}{196}$ ✓answer/*antwoord* ✓answer/*antwoord* (3)

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1.1.3	$\sqrt{x-1}+3=x$ $\sqrt{x-1}=x-3$ $\left(\sqrt{x-1}\right)^2=(x-3)^2$ $x-1=x^2-6x+9$ $x^2-7x+10=0$ $(x-2)(x-5)=0$ $x\neq 2$ *or/of* $x=5$	✓isolate/*isoleer* √ sign/*teken* ✓squaring/*kwadr* both sides/ *beide kante* ✓std form/*stand vorm* ✓factors/*fakt* ✓$x=5$ ✓$x\neq 2$ (6)
1.1.4	$x^2>3(x+6)$ $x^2-3x-18>0$ $(x-6)(x+3)>0$ **OR/*OF*** $x<-3$ or $x>6$ $x\in(-\infty;-3)\cup(6;\infty)$	✓std form/*vorm* ✓factors/*fakt* ✓$x<-3$ **OR/*OF*** $(-\infty;-3)$ ✓ $x>6$ **OR/*OF*** $(6;\infty)$ (4)
1.2	$2y+x=1$ $x=1-2y$ $x^2+y^2+3xy+y=0$ $(1-2y)^2+y^2+3y(1-2y)+y=0$ $1-4y+4y^2+y^2+3y-6y^2+y=0$ $1-y^2=0$ $(1-y)(1+y)=0$ $y=1$ *or* $y=-1$ $x=-1$ *or* $x=3$ **OR/*OF***	✓$x=1-2y$ ✓substitution/*verv* ✓std form/*stand vorm* ✓factors/*fakt* ✓y-values/*wrdes* ✓x-values/*wrdes*

	$2y+x=1$ $y=\frac{1-x}{2}$	✓ $y=\frac{1-x}{2}$
	$x^2+y^2+3xy+y=0$ $x^2+\left(\frac{1-x}{2}\right)^2+3x\left(\frac{1-x}{2}\right)+\frac{1-x}{2}=0$	✓substitution/*verv*
	$x^2+\frac{1-2x+x^2}{4}+\frac{3x-3x^2}{2}+\frac{1-x}{2}=0$ $4x^2+1-2x+x^2+6x-6x^2+2-2x=0$ $-x^2+2x+3=0$ $x^2-2x-3=0$ $(x-3)(x+1)=0$ $x=3 \quad or \quad x=-1$ $y=-1 \quad or \quad y=1$	✓std form/*stand vorm* ✓factors/*fakt* ✓x-values/*wrdes* ✓y-values/*wrdes* (6)
1.3	$3-12k^2=0$ $1-4k^2=0$ $k^2=\frac{1}{4}$ $k=\pm\frac{1}{2}$	✓$3-12k^2=0$ ✓ $k^2=\frac{1}{4}$ ✓ $k=\pm\frac{1}{2}$ (3)
	$3-12k^2=0$ $1-4k^2=0$ $(1-2k)(1+2k)=0$ $k=\frac{1}{2} \quad OR/OF \quad k=-\frac{1}{2}$	✓$3-12k^2=0$ ✓ $(1-2k)(1+2k)=0$ ✓ $k=\pm\frac{1}{2}$ (3) **[24]**

QUESTION/*VRAAG* 2

2.1	$\frac{3^{m+4}-6.3^{m+1}}{7.3^{m+2}}$ $=\frac{3^{m+1}(3^3-6)}{7.3^{m+1}.3}$ $=\frac{3^3-6}{7.3}$ $=\frac{21}{21}$ $=1$ **OR/*OF*** $\frac{3^{m+4}-6.3^{m+1}}{7.3^{m+2}}$ $=\frac{3^m(3^4-6.3)}{3^m(7.3^2)}$ $=\frac{3^m.63}{3^m.63}$ $=1$	✓common factor/*gemene fakt* ✓ 3^3-6 ✓simplification/*vereenv.* ✓answer/*antw.* ✓common factor /*gemene fakt* ✓$(3^4-6.3)$ ✓simplification/*vereenv.* ✓answer/*antw.* (4)
2.2.1	$x^{\frac{-3}{4}}=8$ $x^{\frac{-3}{4}}=2^3$ $x=(2^3)^{\frac{4}{-3}}$ $x=2^{-4}$ $x=\frac{1}{16}$ **OR/*OF*** $x^{\frac{-3}{4}}=8$ $\sqrt[4]{x^{-3}}=2^3$ $x^{-3}=2^{12}$ $(2^{12}=4096)$ $x^{-1}=2^4$ $(2^4=16)$ $x=2^{-4}$ $x=\frac{1}{16}$	✓2^3 ✓rational exponent/ *rasionele eksp* ✓ answer in any form/ *antw. in enige vorm* (3) ✓use of surds/*gebr van wortls* ✓ $x^{-1}=2^4$ ✓answer in any form/*antw. in enige vorm* (3)

2.2.2	$2^{2x} - 2^x = 2$ $2^{2x} - 2^x - 2 = 0$ $(2^x + 1)(2^x - 2) = 0$ $2^x \neq -1$ or $2^x = 2$ $x = 1$	**NOTE/ *LET WEL*:** If answer only of $x = 1$: award 1/4 marks *Slegs antwoord van x = 1: gee 1/4 punte* If the learner writes $2x - x = 1$ Breakdown: 0/4 marks *As die leerder* $2x - x = 1$ *skryf* *Ontleding: 0/4 punte*	✓std vorm/*stand vorm* ✓factors/*fakt* ✓$x = 1$ ✓$2^x \neq -1$ (4)
2.3	$(x+y)^2 = \left(\frac{3-\sqrt{a}}{\sqrt{2}} + \frac{4+\sqrt{a}}{\sqrt{2}}\right)^2$ $= \left(\frac{7}{\sqrt{2}}\right)^2$ $= \frac{49}{2}$ $= 24\frac{1}{2}$ **OR/*OF*** $(x+y)^2 = x^2 + 2xy + y^2$ $= \left(\frac{3-\sqrt{a}}{\sqrt{2}}\right)^2 + 2\left(\frac{3-\sqrt{a}}{\sqrt{2}}\right)\left(\frac{4+\sqrt{a}}{\sqrt{2}}\right) + \left(\frac{4+\sqrt{a}}{\sqrt{2}}\right)^2$ $= \left(\frac{9-6\sqrt{a}+a}{2}\right) + 2\left(\frac{12-\sqrt{a}-a}{2}\right) + \left(\frac{16+8\sqrt{a}+a}{2}\right)$ $= \left(\frac{25+2\sqrt{a}+2a}{2}\right) + (12-\sqrt{a}-a)$ $= \frac{25}{2} + \sqrt{a} + a + 12 - \sqrt{a} - a$ $= 24\frac{1}{2}$	✓substitution/*verv.* ✓simplification/*vereenv.* ✓answer/*antw.* ✓substitution/*verv.* ✓simplification/*vereenv.* ✓answer/*antw.* (3)
2.4	$\sqrt[12]{10} \cdot \sqrt[6]{64.10} \cdot \sqrt[4]{81.10} \cdot \sqrt{4.10}$ $= \sqrt[12]{10} \cdot \sqrt[6]{2^6.10} \cdot \sqrt[4]{3^4.10} \cdot \sqrt{2^2.10}$ $= 10^{\frac{1}{12}} \cdot 2^{\frac{6}{6}} \cdot 10^{\frac{1}{6}} \cdot 3^{\frac{4}{4}} \cdot 10^{\frac{1}{4}} \cdot 2^{\frac{2}{2}} \cdot 10^{\frac{1}{2}}$ $= 2 \times 3 \times 2 \times 10^{\frac{12}{12}}$ $= 120$ **OR/*OF***	✓split the surd/ *skei wortel* ✓prime base/ *priem basis* ✓rational exponents/ *rasionele eksp* ✓$10^{\frac{12}{12}}$	

	$= \sqrt[12]{2.5} \ .\sqrt[6]{2^7.5} \ .\sqrt[4]{3^4.2.5}.\sqrt{2^3.5}$ $= 2^{\frac{1}{12}}.5^{\frac{1}{12}} \ .2^{\frac{7}{6}}.5^{\frac{1}{6}} \ . 3^{\frac{4}{4}}.2^{\frac{1}{4}}.. 5^{\frac{1}{4}}.2^{\frac{3}{2}}.5^{\frac{1}{2}}$ $= 2^{\frac{36}{12}} \times 3^{\frac{4}{4}} \times 5^{\frac{12}{12}}$ $= 2^3 \times 3^1 \times 5^1$ $= 120$	✓prime base/ *priem basis* ✓rational exponents/ *rasionele eksp* ✓exponent law/ *eksp. wet* ✓simpification/ *vereenv* (4) **[18]**

QUESTION/*VRAAG* 3

3.1.1	12 — 17 — 22 5 — 5 $T_n = 5n + 7$	✓ $5n$ ✓ $+7$ (2)
3.1.2	$T_{12} = 5(12) + 7$ $= 67$	✓subst/*verv* ✓answer/*antw* (2)
3.1.3	$5n + 7 = 172$ $5n = 165$ $n = 33$	✓ $5n + 7 = 172$ ✓answer/*antw* (2)
3.2	3 — x — y — 30 $x-3$ — $y-x$ — $30-y$ $x - 3 = y - x$ $y = 2x - 3$ $x - 3 = 30 - y$ $x - 3 = 30 - 2x + 3$ $3x = 36$ $x = 12$ $y = 21$ **OR/*OF*** $30 - y = y - x$ $30 + x = 2y$ $30 + x = 2(2x - 3)$ $36 = 3x$ $12 = x$ $y = 21$ **OR/*OF*** $30 - 3 = 3d$ $3d = 27$ $d = 9$ $x = 3 + 9 = 12$ $y = 12 + 9 = 21$	✓ $x - 3 = y - x$ ✓ $30 - y = y - x$ ✓equating/*verg.* ✓ both /*beide* $x = 12$ and/*en* $y = 21$ (4) ✓✓ $30 - 3 = 3d$ ✓ $d = 9$ ✓ both /*beide* $x = 12$ and/*en* $y = 21$ (4) **[10]**

QUESTION/*VRAAG* 4

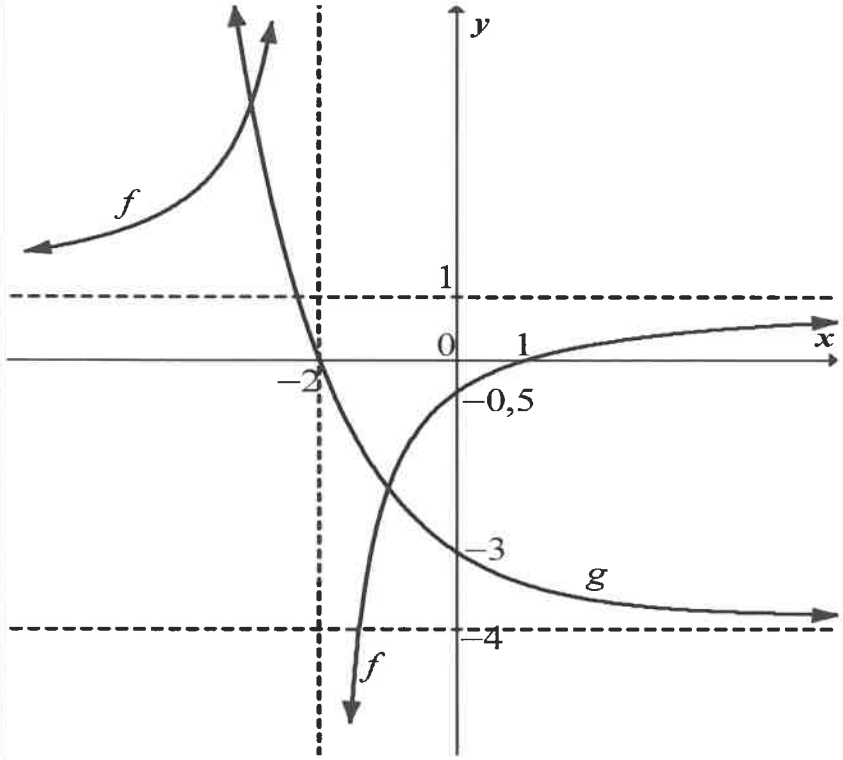
4.1	244 193 148 109 −51 −45 −39 6 6 $T_5 = 76$ **NOTE/*LET WEL*:** Calc. differences 1/2 marks *bereken verskille: 1/2 punte*	✓✓answer/*antw.* (2)
4.2	$2a = 6$ $a = 3$ $3a + b = -51$ $3(3) + b = -51$ $b = -60$ $a + b + c = 244$ $3 + -60 + c = 244$ $c = 301$ $T_n = 3n^2 - 60n + 301$	✓ $a = 3$ ✓ $b = -60$ ✓ $c = 301$ ✓ $T_n = 3n^2 - 60n + 301$ (4)
4.3	$3n^2 - 60n + 301 = 508$ $3n^2 - 60n - 207 = 0$ $n^2 - 20n - 69 = 0$ $(n + 3)(n - 23) = 0$ $n = 23$ or $n \neq -3$	✓equating/*verg.* ✓std form/*stand vorm* ✓factors/*fakore* ✓select/ *kies* $n = 23$ (4)
4.4	using first diff./ *gebruik eerste versk* $T_n = 6n - 57$ $453 = 6n - 57$ $510 = 6n$ $n = 85$ between T_{85} and T_{86} *in the quadratic pattern* *tussen* T_{85} *en* T_{86} *in die kwadratiese patroon* **OR/*OF*** In the quadratic pattern / *in die kwadratiese patroon* $T_{n+1} - T_n = 453$ $3(n+1)^2 - 60(n+1) + 301 - (3n^2 - 60n + 301) = 453$ $3n^2 + 6n + 3 - 60n - 60 - 3n^2 + 60n = 453$ $6n = 510$ $n = 85$ between T_{85} and T_{86} *tussen* T_{85} *en* T_{86}	✓ $6n - 57$ ✓ $453 = 6n - 57$ ✓ between T_{85} and T_{86} *tussen* T_{85} *en* T_{86} (3) ✓ $3(n+1)^2 - 60(n+1) + 301 - (3n^2 - 60n + 301) = 453$ ✓ $n = 85$ ✓ between T_{85} and T_{86} *tussen* T_{85} *en* T_{86} (3)

4.5	$T_n = 3n^2 - 60n + 300 + 1$ $= 3(n-10)^2 + 1$ $(n-10)^2 \geq 0$ for/*vir* $n \in N$ $3(n-10)^2 \geq 0$ $3(n-10)^2 + 1 > 0$ All terms in the pattern are positive/*al die terme in die patroon is positief*	✓✓ $T_n = 3(n-10)^2 + 1$ ✓✓argument (4)
	OR/*OF*	
	$Tn = 3n^2 - 60n + 301$ $= 3(n-10)^2 + 1$ T is a minimum valued function with minimum value 1 Range of T: $y \geq 1$ All terms in the pattern are positive. *T is funksie met minimum waarde van 1* *Waardeversameling van T;* $y \geq 1$ *al die terme in die patroon is positief*	✓✓ $T_n = 3(n-10)^2 + 1$ ✓✓argument
	OR/*OF*	
	$p = \frac{-b}{2a}$ $= -\frac{(-60)}{6}$ $= 10$ $q = 3(10)^2 - 60(10) + 301$ $= 1$ T is a minimum valued function with minimum value 1 Range of T: $y \geq 1$ All terms in the pattern are positive. *T is funksie met minimum waarde van 1* *Waardeversameling van T;* $y \geq 1$ *al die terme in die patroon is positief*	✓ $p = 10$ ✓ $q = 1$ ✓✓argument (4) **[17]**

QUESTION/*VRAAG* 5

5.1	$f(-3)=\frac{-3}{-3+2}+1$ $=4$	✓answer/*antw.* (1)
5.2	$4=2^{-x}-4$ $8=2^{-x}$ $2^3=2^{-x}$ $x=-3$	✓$4=2^{-x}-4$ ✓answer /*antw.* (2)
5.3	$x=-2$ $y=1$	✓$x=-2$ ✓ $y=1$ (2)
5.4	$y>-4$ **OR/*OF*** $y\in(-4\,;\infty)$	✓answer/*antw.* (1) ✓answer/*antw.* (1)

5.5	*y*-intercept/*afsnit*: $y=\frac{-3}{0+2}+1$ $=\frac{-1}{2}$ *y*-intercept/*afsnit* is $\left(0\ ;-\frac{1}{2}\right)$ *x*-intercept/*afsnit*: $0=\frac{-3}{x+2}+1$ $-1=\frac{-3}{x+2}$ $-x-2=-3$ $-x=-1$ $x=1$ *x*-intercept/*afsnit* is (1 ; 0)	✓subst/*verv* $x=0$ ✓$y=\frac{-1}{2}$ ✓subst/*verv* $y=0$ ✓simplification/*vereenv.* ✓$x=1$ (5)
5.6	$y=-x+c$ $1=-(-2)+c$ $-1=c$ $y=-x-1$ **OR/*OF*** $y-1=-(x-(-2))$ $y=-x-2+1$ $y=-x-1$	✓subst/*verv* ✓answer/*antw.* (2) ✓subst/*verv* ✓answer/*antw.* (2)

5.7		*f* ✓asympt/*asimpt* ✓Shape / *vorm* ✓*x* and/*en y* intercepts / *afsnitte* *g* ✓asymptote/*asimpt* ✓*x*-intercept/*afsnit* (–2 ; 0) ✓*y*-intercept/*afsnit* (0 ; –3) (6)
5.8	$x \leq -3$ or $-2 < x \leq -1$ **OR/*OF*** $x \in (-\infty ; -3) \cup (-2 ; -1]$	✓$x \leq -3$ ✓$-2 < x \leq -1$ (2) ✓$(-\infty ; -3)$ ✓$(-2 ; -1]$ (2) **[21]**

QUESTION/*VRAAG* 6

6.1	$0=-x^2-x+6$ $x^2+x-6=0$ $(x+3)(x-2)=0$ $x=-3$ *or / of* $x=2$ B(–3 ; 0) and C(2 ; 0)	✓$y=0$ ✓standard form/*vorm* ✓factors/*faktore* ✓both answers/*beide antw* (4)
6.2	$x=\frac{-b}{2a}$ $x=\frac{-(-1)}{2(-1)}$ $=-\frac{1}{2}$ **NOTE/ *LET WEL*:** If answer only: award 2/2 marks *Slegs antwoord : gee 2/2 punte* **OR/ *OF*** $x=\frac{x_1+x_2}{2}$ $=\frac{(-3)+(2)}{2}$ $=-\frac{1}{2}$	✓method/*metode* ✓answer/*antw.* (2) ✓method/*metode* ✓answer/*antw* (2)
6.3	$f\left(-\frac{1}{2}\right)$ $=-\left(-\frac{1}{2}\right)^2-\left(-\frac{1}{2}\right)+6$ $=6\frac{1}{4}$ TP / *DP* $\left(-\frac{1}{2};6\frac{1}{4}\right)$ Range/*waardeversameling* $y\in\left(-\infty\ ;6\frac{1}{4}\right]$ OR/*OF* $y\le 6\frac{1}{4}$	✓Subst ✓$6\frac{1}{4}$ ✓Answer/*antw.* (3)
6.4	D(0 ; 6) $m_{AD}=\frac{6-4}{0-(-2)}$ $=1$ Equation of/*vergelyking van g*: $g(x)=x+6$	✓coordinates/*koördinate* D ✓gradient. ✓answer/*antw* (3)

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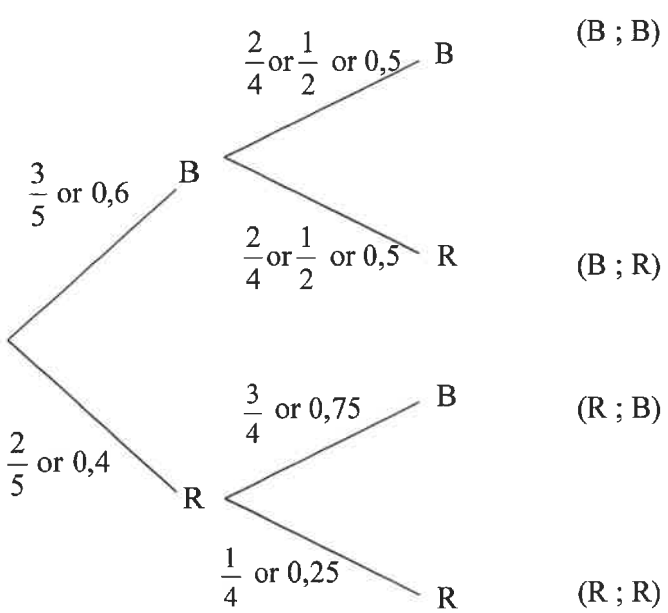
6.5	Average/*Gemid.*gradient = gradient of/*van g* $=1$	✓answer/*antw.* (1)
6.6	$f(x)=-\left(x+\frac{1}{2}\right)^2+\frac{25}{4}$ $h(x)=\left(x+\frac{1}{2}-3\right)^2-\frac{25}{4}$ $h(x)=\left(x-\frac{5}{2}\right)^2-\frac{25}{4}$ **OR/*OF*** $f(x)=-x^2-x+6$ $h(x)=(x-3)^2+(x-3)-6$ $h(x)=x^2-5x$ $h(x)=\left(x-\frac{5}{2}\right)^2-\frac{25}{4}$	✓ in the form/ *in die vorm* $f(x)=-\left(x+\frac{1}{2}\right)^2+\frac{25}{4}$ ✓ $\left(x-\frac{5}{2}\right)^2$ ✓ $-\frac{25}{4}$ (3) ✓ $h(x)=(x-3)^2+(x-3)-6$ ✓ $\left(x-\frac{5}{2}\right)^2$ ✓ $-\frac{25}{4}$ (3)
6.7	$-3<x<2$ **OR/*OF*** $x\in(-3\,;2)$	✓✓answer/*antw.* (2) ✓✓answer/*antw.* (2)
6.8	$r=-2$ By symmetry/*deur simmetrie* $p=1$ $p-r=3$ **OR/*OF*** $-x^2-x+6=4$ $-x^2-x+2=0$ $x^2+x-2=0$ $(x+2)(x-1)=0$ $x=-2$ *or/of* $x=1$ $r=-2$ $p=1$ $p-r=3$	✓$r=-2$ ✓✓$p=1$ ✓answer/*antw.* (4) ✓$r=-2$ ✓✓$p=1$ ✓answer/*antw.* (4) **[22]**

QUESTION/*VRAAG* 7

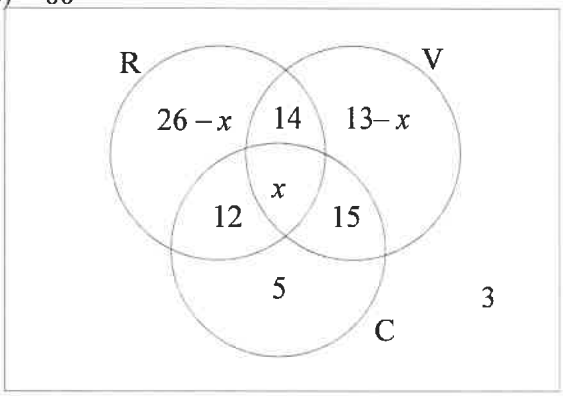
7.1	$A = P(1-i)^n$ $20000 = 80000(1-i)^5$ $0,25 = (1-i)^5$ $\sqrt[5]{0,25} = 1-i$ $i = 1-\sqrt[5]{0,25}$ $i = 0,24214417$ $i = 24,21\%$	✓substitution into correct formula/ *verv.in korrekte vorm* ✓simplification/*vereenv* ✓answer/*antw.* (3)
7.2	$1+i_{eff} = \left(1+\frac{i_{nom}}{m}\right)^m$ $1+i_{eff} = \left(1+\frac{0,05}{4}\right)^4$ $i_{eff} = 0,050945336...$ Effective rate = 5,09 % p.a.	✓vorm/*vorm* ✓subst/*verv* ✓answer/*antw.* (3)
7.3	$A = P(1+i)^n$ $= 30000\left(1+\frac{0,12}{12}\right)^{2\times12}\left(1+\frac{0,108}{2}\right)^{4\times2}$ $= R\,58\,017,51$ **OR/ OF** $A = P(1+i)^n$ $= 30000\left(1+\frac{0,12}{12}\right)^{2\times12}$ $= R38092,04$ $A = 38092,04\left(1+\frac{0,108}{2}\right)^{4\times2}$ $= R\,58\,017,51$	✓$30\,000\left(1+\frac{0,12}{12}\right)^{2\times12}$ ✓$\left(1+\frac{0,12}{12}\right)^{2\times12}$ ✓$\left(1+\frac{0,108}{2}\right)^{4\times2}$ ✓answer/*antw.* (4) ✓$30\,000\left(1+\frac{0,12}{12}\right)^{2\times12}$ ✓ R38092,04 ✓ $38092,04\left(1+\frac{0,108}{2}\right)^{4\times2}$ ✓answer/*antw.* (4)

7.4	$A = 25000\left(1+\frac{0,18}{12}\right)^{5\times12} - 8000\left(1+\frac{0,18}{12}\right)^{3\times12} + 4000\left(1+\frac{0,18}{12}\right)^{1,5\times12}$ $= 25000\left(1+\frac{0,18}{12}\right)^{60} - 8000\left(1+\frac{0,18}{12}\right)^{36} + 4000\left(1+\frac{0,18}{12}\right)^{18}$ $= \text{R}\,52636,74$ **OR/*OF***	✓ $\frac{0,18}{12}$ ✓ $25000\left(1+\frac{0,18}{12}\right)^{5\times12}$ ✓ $-8000\left(1+\frac{0,18}{12}\right)^{3\times12}$ ✓ $+4000\left(1+\frac{0,18}{12}\right)^{18}$ ✓✓answer/*antw.*
	$A_1 = 25000\left(1+\frac{0,18}{12}\right)^{2\times12}$ $= \text{R}35\,737,57$ Amount in the account after the withdrawal:/*Bedrag in rekening na onttrekking* $\text{R}35\,737,5703 - \text{R}\,8000$ $= \text{R}\,27737,5703$ Amount in the account just before the deposit/*bedrag in rekening voor die deposito* $A_2 = R27737,5703\left(1+\frac{0,18}{12}\right)^{1,5\times12}$ $= R36262,45279$ Amount in the account just after the deposit/*Bedrag in rekening na onttrekking* R 36262,45279 + R4000 =R 40262,45279 Amount in the account at the end of 5 years/*Bedrag in rekening aan die einde van 5 jaar* $= 40262,45279\left(1+\frac{0,18}{12}\right)^{1,5\times12}$ $= \text{R}52636,74$	✓ $\frac{0,18}{12}$ ✓ $25000\left(1+\frac{0,18}{12}\right)^{2\times12}$ ✓ 27737,57 ✓ $27737,5703\left(1+\frac{0,18}{12}\right)^{1,5\times12}$ ✓ 40262,45 ✓answer/*antw.* (6) **[16]**

QUESTION/*VRAAG* 8

8.1.1		✓branches/*takke* ✓probabilities/*waarskynlikhede* ✓outcomes/*uitkomste* (3)
8.1.2	$P(R,B) = \frac{2}{5} \times \frac{3}{4}$ $= \frac{3}{10} = 0,3$ **NOTE/ *LET WEL*:** If answer only: award 2/2 marks *Slegs antwoord : gee 2/2 punte*	✓ $\frac{2}{5} \times \frac{3}{4}$ ✓answer/*antwoord* (2)
8.2.1	$P(A) = 0,4$ $P(B) = 0,3$ $P(A \text{ or } B) = 0,58$ $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ $0,58 = 0,4 + 0,3 - P(A \text{ and } B)$ $P(A \text{ and } B) = 0,12 \neq 0$ Events A and B are not mutually exclusive/*Gebeurtenis A en B is nie onderlinguitsluitend nie*	✓$0,58 = 0,4 + 0,3 - P(A \text{ and } B)$ ✓ $P(A \text{ and } B) = 0,12 \neq 0$ ✓Not mutually exclusive/ *nie onderling uitsluitend nie* (3)
8.2.2	$P(A \text{ and } B) = 0,12$ $P(A) \times P(B) = 0,4 \times 0,3$ $= 0,12$ $\therefore P(A \text{ and } B) = P(A) \times P(B)$ A and B are independent events/*is onafhanklik*	✓$P(A) \times P(B) = 0,4 \times 0,3$ ✓$P(A \text{ and } B) = P(A) \times P(B)$ ✓A and B are independent/*is onafhanklik* (3) **[11]**

QUESTION/*VRAAG* 9

9.1	n(S) = 80  	✓ 14 or/of 12 or/of 15 ✓ $26-x$ ✓ $13-x$ ✓5 ✓ 3 (5)
9.2	$26-x+14+x+12+5+15+13-x+3=80$ $88-80=x$ $x=8$	✓ $26-x+14+x+12+5+15+13-x+3$ ✓equating to/*gelyk aan* 80 (2)
9.3	Number who chose Rugby only/*aantal wat net rugby kies* $=26-8$ $=18$	✓answer/*antw.* (1)
9.4	P(At least 2 types of sports /*ten minste 2 sportsoorte*) $=\frac{12+14+15+8}{80}$ $=\frac{49}{80}$ **NOTE/ *LET WEL*:** If answer only: award 3/3 marks *Slegs antwoord : gee 3/3 punte* **OR/*OF*** P(at least 2 types of sport/*ten minste 2 sportsoorte*) $=1-\frac{18+5+5+3}{80}$ $=1-\frac{31}{80}$ $=\frac{49}{80}$	✓numerator/*Noemer* ✓denominator/*Teller* ✓answer/*antw.* (3) ✓ $\frac{18+5+5+3}{80}$ ✓method/*metode* ✓answer/*antw.* (3) **[11]**

TOTAL/*TOTAAL*: 150

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