

set / Rie



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE/
NASIONALE
SENIOR SERTIFIKAAT**

GRADE/GRAAD 12

JUNE/JUNIE 2022

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

MARKS/PUNTE: 150

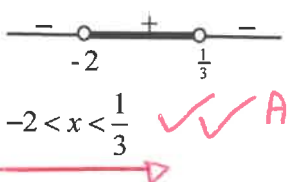
This marking guideline consists of 16 pages./
Hierdie nasienriglyn bestaan uit 16 bladsye.

NOTE/LET OP:

- 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 substitusie word toegeken vir substitusie in die korrekte formule.

QUESTION 1/VRAAG 1

<p>1.1.1</p> $x^2 = -4x$ $x^2 + 4x = 0 \quad \checkmark$ $x(x+4) = 0 \quad \checkmark$ $x = 0 \text{ or/of } x+4 = 0$ $x = 0 \text{ or/of } x = -4 \quad \checkmark$ <p>OR / OF</p> $x^2 + 4x = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $= \frac{-4 \pm \sqrt{(4)^2 - 4(1)(0)}}{2(1)}$ $x = 0 \text{ or/of } x = -4$	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p>Answers only – Full marks Slegs antwoorde – Volpunte</p> </div>	<ul style="list-style-type: none"> ✓ standard form / standaardvorm ✓ factors / faktore ✓ both answers / beide antwoorde <p style="text-align: center;">OR / OF</p> <ul style="list-style-type: none"> ✓ standard form / standaardvorm ✓ correct substitution into correct formula / korrekte vervanging in korrekte formule ✓ both answers / beide antwoorde <p style="text-align: right;">(3)</p>
<p>1.1.2</p> $x^2 + x - 1 = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $x = \frac{-(-1) \pm \sqrt{(1)^2 - 4(1)(-1)}}{2(1)} \quad \checkmark$ $x = \frac{-1 \pm \sqrt{5}}{2}$ $\therefore x = 0,62 \text{ or/of } x = -1,62 \quad \checkmark$	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p>Penalise 1 mark for incorrect rounding off./ Penaliseer 1 punt vir verkeerde afronding.</p> </div>	<ul style="list-style-type: none"> ✓ substitution / vervanging ✓✓ x-values / waardes <p style="text-align: right;">(3)</p>

<p>1.1.3</p>	$\sqrt{x+4} - \frac{4}{\sqrt{x-2}} = 0$ $\sqrt{x+4} = \frac{4}{\sqrt{x-2}} \quad \checkmark$ $(\sqrt{x+4})^2 = \left(\frac{4}{\sqrt{x-2}}\right)^2$ $x+4 = \frac{16}{x-2} \quad \checkmark$ $(x+4)(x-2) = 16$ $x^2 + 2x - 24 = 0 \quad \checkmark$ $(x+6)(x-4) = 0 \quad \checkmark$ <p>$\therefore x \neq -6$ or / of $x = 4$ <i>reject</i> \rightarrow <i>ans + selection</i></p>	<ul style="list-style-type: none"> \checkmark isolating surd / isoleer wortelvorm \checkmark square both sides / kwadreer beide kante \checkmark standard form / standaardvorm \checkmark factors / faktore \checkmark selection / keuse <p style="text-align: right;">(5)</p>
<p>1.1.4</p>	$(x+2)(-3x+1) > 0$ <p>critical values/kritieke waardes</p> $x = -2 \text{ or/of } x = \frac{1}{3} \quad \checkmark$  <p>$-2 < x < \frac{1}{3}$ $\checkmark \checkmark A$</p> <p style="text-align: center;">OR/OF</p> $x \in \left(-2; \frac{1}{3}\right), x \in \mathbf{R}$	<ul style="list-style-type: none"> \checkmark critical values / kritieke waardes $\checkmark \checkmark -2 < x < \frac{1}{3}$ (accuracy / akkuraatheid) <p style="text-align: center;">OR/OF</p> $x \in \left(-2; \frac{1}{3}\right)$ <p style="text-align: right;">(3)</p>

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1.2

$$3 - y + 2x = 0$$

$$y = 2x + 3 \dots\dots\dots(1) \checkmark$$

$$6x + 4y^2 = 3 + 5xy \dots\dots(2)$$

(1) into/in (2):

$$6x + 4(2x + 3)^2 = 3 + 5x(2x + 3) \checkmark$$

$$6x + 4(4x^2 + 12x + 9) = 3 + 5x(2x + 3)$$

$$6x + 16x^2 + 48x + 36 = 3 + 10x^2 + 15x$$

$$6x^2 + 39x + 33 = 0$$

$$2x^2 + 13x + 11 = 0 \checkmark$$

$$(2x + 11)(x + 1) = 0 \checkmark$$

$$x = -\frac{11}{2} \text{ or/of } x = -1 \checkmark \text{ both}$$

$$y = -8 \text{ or/of } y = 1 \checkmark \text{ both}$$

OR / OF

$$3 - y + 2x = 0 \dots\dots\dots(1)$$

$$6x + 4y^2 = 3 + 5xy \dots\dots\dots(2)$$

$$x = \frac{y-3}{2} \dots\dots\dots(3)$$

Subst./Verv. (3) into/in (2):

$$6\left(\frac{y-3}{2}\right) + 4y^2 = 3 + 5y\left(\frac{y-3}{2}\right)$$

$$6(y-3) + 8y^2 = 6 + 5y(y-3)$$

$$6y - 18 + 8y^2 = 6 + 5y^2 - 15y$$

$$3y^2 + 21y - 24 = 0$$

$$y^2 + 7y - 8 = 0$$

$$(y-1)(y+8) = 0$$

$$y = 1 \text{ or/of } y = -8$$

$$x = -1 \text{ or/of } x = -\frac{11}{2}$$

$$\checkmark y = 2x + 3$$

✓ substitution / vervanging

✓ standard form / standaardvorm

✓ factors / faktore

✓ x-values / waardes

✓ y-values / waardes

OR / OF

$$\checkmark x = \frac{y-3}{2}$$

✓ substitution / vervanging

✓ standard form / standaardvorm

✓ factors / faktore

✓ y-values / waardes

✓ x-values / waardes

(6)

1.3	$9x^2 - 12px + 4p^2 = 0$ ✓ For equal roots/Vir gelyke wortels: $\Delta = 0$ $\therefore b^2 - 4ac = 0$ $(-12p)^2 - 4(9)(4p^2) = 0$ ✓ Δ ✓ 0 $144p^2 - 144p^2 = 0$ $0 = 0$ \Rightarrow For all Real values / Vir alle Reële waardes $p \in \mathbb{R}$ ✓ →	✓ standard form / standaardvorm ✓ $\Delta = 0$ ✓ conclusion / gevolgtrekking (4) [24]
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QUESTION 2/VRAAG 2

2.1.1	$r = \frac{T_3}{T_2} = \frac{18}{9} = 2$	✓ answer / antwoord (1)	1
2.1.2	$T_n = a \cdot r^{n-1}$ $2304 = \left(\frac{9}{2}\right)(2)^{n-1}$ $2^{n-1} = 512$ $= 2^9$ $\therefore n-1 = 9$ $n = 10$	✓ substitution / vervanging ✓ answer / antwoord (2)	2
2.2	$S_\infty = \frac{a}{1-r}$ $12 = \frac{6}{1-m}$ $12 - 12m = 6$ $-12m = -6$ $m = \frac{1}{2}$	✓ substitution / vervanging ✓ answer / antwoord (2)	2
2.3	$\frac{T_5}{T_3} = \frac{ar^4}{ar^2} = \frac{162}{18}$ $r^2 = 9$ $r = \pm 3$ $\therefore r = -3 \quad (r < 0)$ $a \cdot (-3)^2 = 18$ $a = 2$ $S_7 = \frac{2((-3)^7 - 1)}{-3 - 1}$ $= 1094$	✓ setting up both equations <i>opstel van beide vergelykings</i> ✓ value(s) of r / <i>waarde(s) van r</i> ✓ value of a / <i>waarde van a</i> ✓ substitution into S_n / <i>vervanging in S_n</i> ✓ answer / antwoord (5)	5
2.4.1	$T_1 = 8 \text{ and / en } t_n = 4n - 2$ $t_1 = 4(1) - 2 = 2$ $t_2 = 4(2) - 2 = 6$ $\therefore T_2 = 10 ; T_3 = 16$	✓ finding t_1 and t_2 / <i>berekening van t_1 en t_2</i> ✓ $T_2 = 10$ ✓ $T_3 = 16$ (3)	3

<p>2.4.2</p>	<p>8 ; 10 ; 16 ; 26 2 ; 6 ; 10 4 ; 4</p> <p> $2a = 4$ $3a + b = 2$ $a + b + c = 8$ $a = 2$ $3(2) + b = 2$ $(2) + (-4) + c = 8$ $b = -4$ $c = 10$ </p> <p>$\therefore T_n = 2n^2 - 4n + 10$</p> <p>OR/OF</p> <p> $T_n = T_1 + s_{n-1}$ $= 8 + \frac{n-1}{2}(2(2) + (n-2)4)$ $= 8 + \frac{n-1}{2}(4n-4)$ $= 8 + (n-1)(2n-2)$ $= 8 + 2n^2 - 4n + 2$ $= 2n^2 - 4n + 10$ </p> <p><i>method must be shown as values are given in the question</i> <i>(NB)</i></p>	<p> ✓ value of a / waarde van a ✓ value of b / waarde van b ✓ value of c / waarde van c </p> <p>(3)</p> <p>OR/OF</p> <p> ✓ method / metode ✓ simplification / vereenvoudiging ✓ answer / antwoord </p> <p>(3)</p>
<p>2.4.3</p>	<p> $2n^2 - 4n + 10 = 3050$ ✓ $2n^2 - 4n - 3040 = 0$ $n^2 - 2n - 1520 = 0$ $(n-40)(n+38) = 0$ ✓ $n = 40$ or / of $n \neq -38$ \rightarrow reject </p> <p><i>ans + selection</i></p>	<p> ✓ equating / gelyk stel </p> <p> ✓ factors / faktore ✓ selection / keuse ($n = 40$) </p> <p>(3)</p>

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[19]

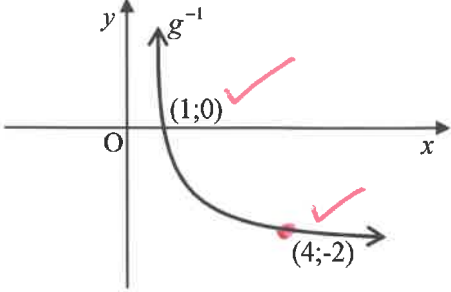
QUESTION 3/VRAAG 3

3.1	$\text{Area } \Delta_1 = \frac{1}{2} b \times h$ $= \frac{1}{2} (4)(1)$ $= 2 \text{ units}^2 / \text{eenhede}^2$	✓ answer / antwoord (1)	1
3.2	$\text{Area } \Delta_{26} = \frac{1}{2} b \times h$ $= \frac{1}{2} (4)(26)$ $= 52 \text{ units}^2 / \text{eenhede}^2$	✓ $h = 26$ ✓ answer / antwoord (2)	2
3.3	<p>Area of rectangle / Area van reghoek</p> $= l \times b$ $= 104 \times 26$ $= 2704 \text{ units}^2 / \text{eenhede}^2$ <p>Sum of Areas of Triangles / Som van Areas van Driehoeke</p> $= \frac{26}{2} [2 + 52]$ $= 702 \text{ units}^2 / \text{eenhede}^2$ <p>Area of unshaded part / Area van nie-gearseerde deel</p> $= 2704 - 702$ $= 2002 \text{ units}^2 / \text{eenhede}^2$	✓ answer / antwoord ✓ substitution / vervanging ✓ answer / antwoord ✓ method / metode ✓ answer / antwoord (5)	5
			[8]

QUESTION 4/VRAAG 4

4.1	$x \in \mathbb{R}; x \neq 2$ $x < 2$ or $x > 2$ $x \in (-\infty; 2) \text{ or } (2; \infty)$ $x \in (-\infty; \infty); x \neq 2$	✓✓ answer / antwoord (2)	2
4.2	$y = \frac{8}{0-2} + 2 = -2$	✓ answer / antwoord (1)	1
4.3	$\frac{8}{x-2} + 2 = 0$ $\frac{8}{x-2} = -2$ $-2x + 4 = 8$ $-2x = 4$ $x = -2$	✓ equating to 0 / stel gelyk aan 0 ✓ answer / antwoord (2)	2
4.4		✓ both intercepts / beide afsnitte ✓ asymptotes / asimptote ✓ shape / vorm (3)	3
4.5	$y = -(x-2) + 2$ $y = -x + 4$ $\therefore k = 4$ OR / OF $y = -x + k$ $2 = -2 + k$ $\therefore k = 4$	✓ substitution / vervanging ✓ answer / antwoord (2)	2
4.6	$y = \frac{8}{x-2} + 2$ $x \rightarrow x-3$ $y = \frac{8}{x-5} + 2$ $y \rightarrow -y$ $-y = \frac{8}{x-5} + 2$ $y = -\frac{8}{x-5} - 2$	✓ shift 3 units to the right skuif 3 eenhede na regs ✓ reflection in the x-axis refleksie in die x-as ✓ answer / antwoord (3)	3
		[13]	

QUESTION 5/VRAAG 5

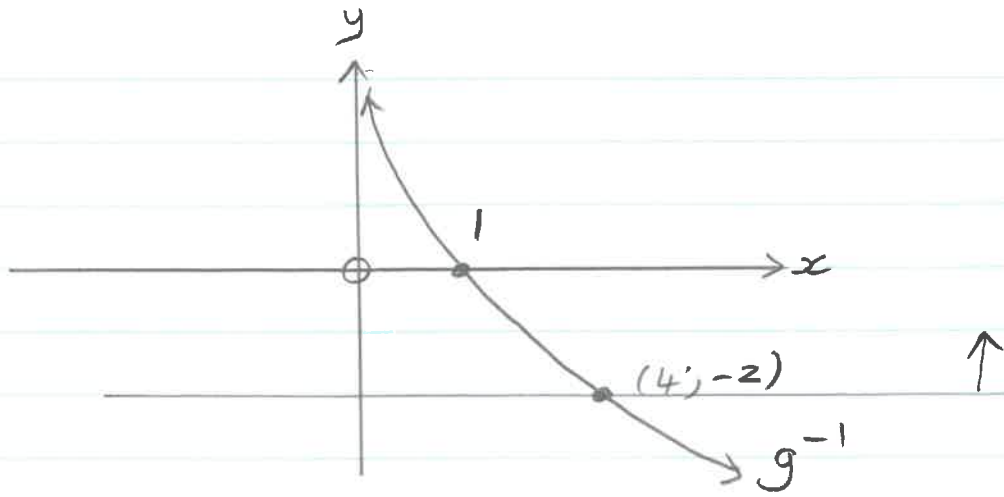
<p>5.1</p>	<p>$x = -1$ ✓ <i>AOS</i></p>	<p>✓ answer / antwoord (1)</p>
<p>5.2</p>	<p>$R(-1; -8)$ ✓ <i>tp</i></p>	<p>✓ answer / antwoord (1)</p>
<p>5.3</p>	<p>$2(x+1)^2 - 8 = 0$ ✓ $(x+1)^2 = 4$ $x+1 = \pm 2$ ✓ $\therefore x = 1$ or / of $x = -3$ ✓</p> <p><u>$P(-3;0)$ and / en $Q(1;0)$</u> ✓</p> <p style="text-align: center;">OR / OF</p> <p>$2(x+1)^2 - 8 = 0$ ✓ $2(x^2 + 2x + 1) - 8 = 0$ $2x^2 + 4x - 6 = 0$ $x^2 + 2x - 3 = 0$ ✓ $(x-1)(x+3) = 0$ ✓ $x = 1$ or / of $x = -3$ $P(-3;0)$ and / en $Q(1;0)$ ✓</p>	<p>✓ equating to 0 / gelyk stel aan 0 ✓ simplification / vereenvoudiging ✓ x-values / x-waardes ✓ coordinates / koördinate</p> <p style="text-align: center;">OR / OF</p> <p>✓ equating to 0 / gelyk stel aan 0 ✓ standard form / standaardvorm ✓ factors / faktore ✓ coordinates / koördinate</p> <p>(4)</p>
<p>5.4</p>	<p>$g: y = \left(\frac{1}{2}\right)^x$ $g^{-1}: x = \left(\frac{1}{2}\right)^y$ ✓ $\therefore g^{-1}: y = \log_{\frac{1}{2}} x$ ✓</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>Answer only – Full marks Slegs antwoord – Volpunte</p> </div>	<p>✓ interchanging x and y omruil van x en y</p> <p>✓ answer / antwoord (2)</p>
<p>5.5</p>	 <p>✓ <i>shape</i></p>	<p>✓ x-intercept / x-afsnit ✓ other point / ander punt ✓ shape / vorm <i>(2;-1) ok</i></p> <p>(3)</p>

1
1
4

2

3

5.6.1.

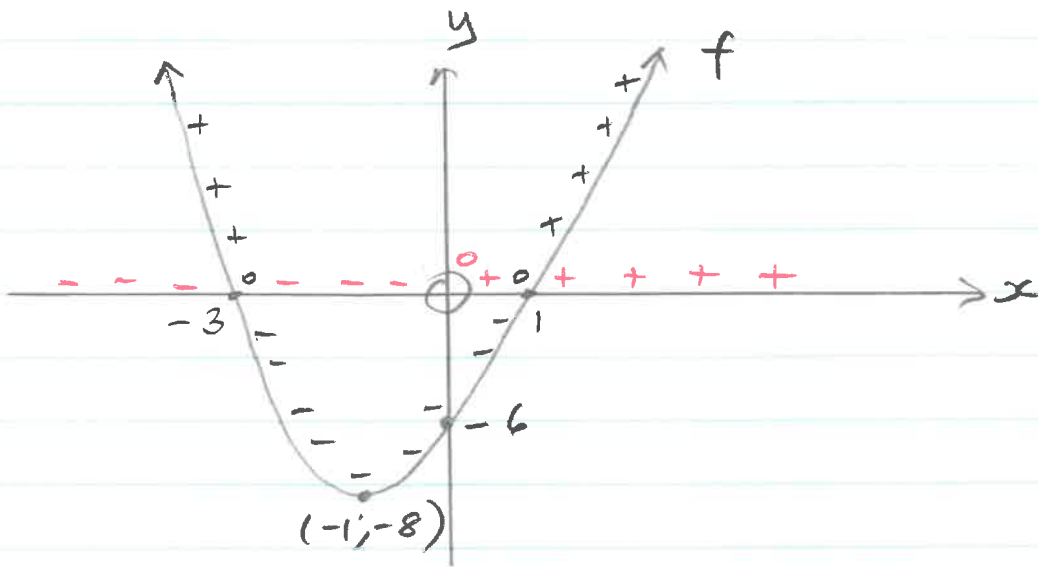


$$g^{-1}(x) \geq -2$$

$$y_{g^{-1}} \geq -2$$

$$x \in (0; 4]$$

5.6.2



$$x \cdot f(x) < 0$$

$$x \cdot y_f -$$

$$\therefore x \in (-\infty; -3) \text{ or } (0; 1)$$

5.6.1	$0 < x \leq 4$ OR / OF $x \in (0; 4]$ \rightarrow ✓✓✓	✓ ✓ answer / antwoord	(2)	2
5.6.2	$x < -3$ or / of $0 < x < 1$ OR / OF $x \in (-\infty; -3) \vee (0; 1)$ \rightarrow	✓ $x < -3$ ✓ $0 < x < 1$ ✓ \cup / or / of	(3)	3
			[16]	

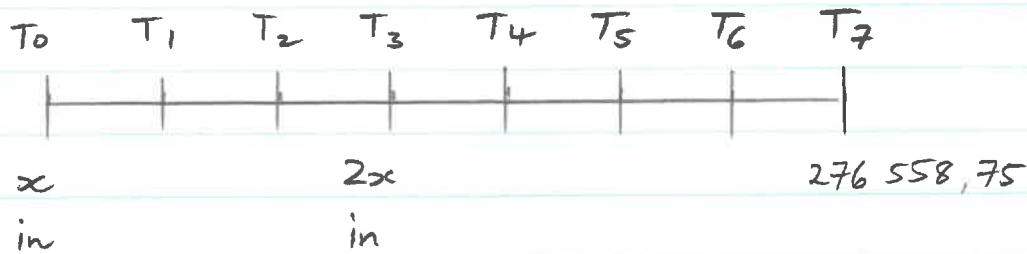
QUESTION 6/VRAAG 6

6.1	$A = P(1 + in)$ $100\,000 = 50\,000(1 + 0,085n)$ ✓ $2 = 1 + 0,085n$ ✓ $1 = 0,085n$ $\therefore n = 11,7647\dots$ ✓ $n = 11 \text{ years / jaar } 10 \text{ months / maande}$ ✓ (since: $0,7647\dots \times 12 = 9,17 \text{ months we round up}$)	✓ substitution / vervanging ✓ simplification / vereenvoudiging ✓ value of n / waarde van n ✓ answer / antwoord	(4)	4
6.2	$A = P(1 - i)^n$ ✓ $A = 24\,000(1 - 0,18)^3$ ✓ $A = R13\,232,83$ ✓ \rightarrow	✓ formula / formule ✓ substitution / vervanging ✓ answer / antwoord	(3)	3
6.3	$x \left(1 + \frac{12\%}{12}\right)^{84} + 2x \left(1 + \frac{12\%}{12}\right)^{48} = R276\,558,75$ ✓ $x \left[\left(1 + \frac{12\%}{12}\right)^{84} + 2 \left(1 + \frac{12\%}{12}\right)^{48} \right] = 276\,558,75$ ✓ $x = \frac{276\,558,75}{\left(1 + \frac{12\%}{12}\right)^{84} + 2 \left(1 + \frac{12\%}{12}\right)^{48}}$ ✓ $x = R50\,000,00$ ✓ \rightarrow	✓ 84 ✓ 48 ✓ $x \left(1 + \frac{12\%}{12}\right)^{84} + 2x \left(1 + \frac{12\%}{12}\right)^{48} = R276\,558,75$ ✓ common factor x / gemene faktor x ✓ $x = \frac{276\,558,75}{\left(1 + \frac{12\%}{12}\right)^{84} + 2 \left(1 + \frac{12\%}{12}\right)^{48}}$ ✓ answer / antwoord	(6)	6
			[13]	

Parallel

$$\begin{aligned} 2,30 \dots x + 3,22 \dots x &= 276\,558,75 \\ 5,53 \dots x &= 276\,558,75 \\ x &= R\,50\,000 \end{aligned}$$

63.



← 12% pa comp. mon. →

Snowball

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

$$T_0 - T_3 : A = x \left(1 + \frac{12}{1200}\right)^{36}$$

$$T_3 - T_7 : A = \left[x \left(1 + \frac{12}{1200}\right)^{36} + 2x \right] \left(1 + \frac{12}{1200}\right)^{48}$$

$$276\,558,75 = \left[x \left(1 + \frac{12}{1200}\right)^{36} + 2x \right] \left(1 + \frac{12}{1200}\right)^{48}$$

$$171\,538,44... = x \left(1 + \frac{12}{1200}\right)^{36} + 2x$$

$$= x \cdot 1,43... + 2x$$

$$171\,538,44... = 3,43... x$$

R 50 000

$$= x$$

6

OR

$$T_2 - T_7 : \quad 276\,558,75 = P \left(1 + \frac{12}{1200}\right)^{48}$$
$$171\,538,44\dots = P$$

$$T_0 - T_3 \quad 171\,538,44\dots - 2x = x \left(1 + \frac{12}{1200}\right)^{36}$$
$$= x \cdot 1,43\dots$$
$$171\,538,44\dots = 3,43\dots x$$
$$\underline{R\,50\,000} = x$$

QUESTION 7/VRAAG 7

Penalise 1 mark for incorrect notation in this question
Penaliseer 1 punt vir verkeerde notasie in hierdie vraag

N

<p>7.1</p>	$f(x) = -2x^2 + x$ $f(x+h) = -2(x+h)^2 + (x+h)$ $= -2x^2 - 4xh - 2h^2 + x + h$ $\frac{f(x+h) - f(x)}{h} = \frac{-2x^2 - 4xh - 2h^2 + x + h - (-2x^2 + x)}{h}$ $= \frac{-4xh - 2h^2 + h}{h}$ $= \frac{h(-4x - 2h + 1)}{h}$ $f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$ $= \lim_{h \rightarrow 0} (-4x - 2h + 1)$ $= -4x - 2(0) + 1$ $= -4x + 1$	<ul style="list-style-type: none"> ✓ $-2x^2 - 4xh - 2h^2 + x + h$ ✓ substitution / vervanging ✓ simplification / vereenvoudiging ✓ factorisation / faktorisering (dividing by h / deel deur h) ✓ answer / antwoord <p>(5)</p>
<p>7.2.1</p>	$D_x \left[\frac{-5x}{\sqrt{x}} - \frac{x^2}{5} \right] = D_x \left[\frac{-5x}{x^{\frac{1}{2}}} - \frac{1}{5}x^2 \right]$ $= D_x \left[-5x^{\frac{1}{2}} - \frac{1}{5}x^2 \right]$ $= -\frac{5}{2}x^{-\frac{1}{2}} - \frac{2}{5}x$	<ul style="list-style-type: none"> ✓ $-5x^{\frac{1}{2}}$ ✓ $-\frac{5}{2}x^{-\frac{1}{2}}$ ✓ $-\frac{2}{5}x$ <p>(3)</p>
<p>7.2.2</p>	$\frac{d}{dx} \left[\left(x + \frac{2}{x} \right) \left(x - \frac{2}{x} \right) \right]$ $\frac{d}{dx} \left[x^2 - \frac{4}{x^2} \right]$ $\frac{d}{dx} [x^2 - 4x^{-2}]$ $= 2x + 8x^{-3}$	<ul style="list-style-type: none"> ✓ $x^2 - \frac{4}{x^2}$ ✓ $-4x^{-2}$ ✓ $2x$ ✓ $+8x^{-3}$ <p>(4)</p>

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Answer ONLY: 0 marks
SLEGS antwoord: 0 punte

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QUESTION 8/VRAAG 8

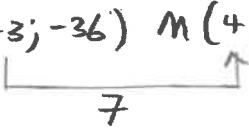
$$f(x) = x^3 + bx^2 + cx + d$$

<p>8.1</p>	<p> $f'(x) = 3x^2 + 2bx + c$ ✓ $f'(x) = 3x^2 - 10x - 8$ ✓ $2b = -10$ ✓ $b = -5$ ✓ $c = -8$ ✓ $f(x) = x^3 - 5x^2 - 8x + d$ sub (2; -16) or (6; 0) $(2)^3 - 5(2)^2 - 8(2) + d = -16$ ✓ $8 - 20 - 16 + d = -16$ $\therefore d = 12$ ✓ </p>	<p> ✓ $f'(x) = 3x^2 + 2bx + c$ ✓ $2b = -10$ ✓ $c = -8$ ✓ substitution of point (2; -16) vervanging van punt (2; -16) (4) </p>
<p>8.2</p> <p>14,81</p>	<p> $f'(x) = 3x^2 - 10x - 8 = 0$ ✓ $(3x+2)(x-4) = 0$ ✓ $x = -\frac{2}{3}$ or / of $x = 4$ ✓ $y = \frac{400}{27}$ or / of $y = -36$ ✓ $L\left(-\frac{2}{3}; \frac{400}{27}\right)$ & $M(4; -36)$ ✓ </p>	<p> ✓ $f'(x) = 0$ ← $\frac{dy}{dx} = 0$ ✓ factors / faktore ✓ x-values / x-waardes ✓ y-values / y-waardes ✓ correct coordinates / korrekte koördinate (5) </p>
<p>8.3</p>	<p> $m = \frac{0+16}{6-2} = 4$ $y - y_1 = m(x - x_1)$ $y - 0 = 4(x - 6)$ $y = 4x - 24$ OR / OF $m = \frac{0+16}{6-2} = 4$ ✓ $y = mx + c$ $y = 4x + c$ $-16 = 4(2) + c$ ✓ $\therefore c = -24$ $y = 4x - 24$ ✓ </p>	<p> ✓ gradient / gradiënt ✓ substitution / vervanging ✓ answer / antwoord OR / OF ✓ gradient / gradiënt ✓ substitution / vervanging ✓ answer / antwoord (3) </p>

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8.4	$y = 4x - 24$ $-36 = 4x - 24$ ✓ $-12 = 4x$ $\therefore x = -3$ ✓ $\Rightarrow AM = 7 \text{ units / eenhede}$ ✓  AM horizontal same y values	✓ substitution of $(x; -36)$ / vervanging van $(x; -36)$ ✓ $x = -3$ ✓ answer / antwoord (3)	3
8.5.1	Increasing $x \in (-\infty; -2/3)$ or $(4; \infty)$ ✓ $x < -2/3$ or $4 < x$ ✓	✓ answer / antwoord (2)	2
8.5.2	$f''(x) = 6x - 10$: concave down $f''(x) < 0$ $6x - 10 < 0$ ✓ $x < 5/3$ ✓ $x \in (-\infty; 5/3)$ ✓	✓ method / metode ✓ answer / antwoord (2)	2
		[19]	

QUESTION 9/VRAAG 9

9.1	$x + h = 10 \Rightarrow h = (10 - x) m$ Let width of rectangle = y / Laat die breedte van reghoek = y $\therefore 2x + 2y = 32$ $y = (16 - x) m$ Area of figure / Oppervlakte van figuur: = Area of Triangle + Area of Rectangle (Oppervlakte van Driehoek + Oppervlakte van Reghoek) $= \frac{1}{2}(b \times h) + (l \times b)$ $= \frac{1}{2}(x)(10 - x) + x(16 - x)$ $= 5x - \frac{1}{2}x^2 + 16x - x^2$ $= -\frac{3}{2}x^2 + 21x$	✓ $h = (10 - x)$ ✓ $y = (16 - x)$ ✓ $\frac{1}{2}(x)(10 - x)$ ✓ $x(16 - x)$ ✓ simplification / vereenvoudiging (5)	5
9.2	$A'(x) = -3x + 21 = 0$ ✓ $-3x = -21$ $x = 7$ ✓	✓ $A'(x) = -3x + 21$ ✓ $A'(x) = 0$ ✓ answer / antwoord (3)	3
9.3	$A = -\frac{3}{2}(7)^2 + 21(7)$ ✓ $= 73,5 m^2$ ✓	✓ substitution / vervanging ✓ answer / antwoord (2)	2
		[10]	

QUESTION 10/VRAAG 10

<p>10.1.1</p>	<p> $a = 450$ ✓ $b = 319$ ✓ $c = 298$ ✓ $d = 748$ ✓ </p>	<p> ✓ value of a / waarde van a ✓ value of b / waarde van b ✓ value of c / waarde van c ✓ value of d / waarde van d </p> <p>(4)</p>	<p>4</p>
<p>10.1.2</p>	<p> $P(F / Not) = \frac{298}{1530}$ ✓ $\frac{149}{765} \approx 0,19$ </p>	<p>✓✓ answer / antwoord</p> <p>(2)</p>	<p>2</p>
<p>10.2</p>		<p>BB</p> <p>BG</p> <p>GB</p> <p>GG</p>	
<p>10.2.1</p>	<p> $\frac{12}{22} \times \frac{11}{21} = \frac{2}{7} \approx 0,29$ ✓ $P(GG)$ </p>	<p>✓ answer / antwoord</p> <p>✓ $\frac{12}{22} \times \frac{11}{21}$</p> <p>(2)</p>	<p>2</p>
<p>10.2.2</p>	<p> $\left(\frac{10}{22} \times \frac{12}{21}\right) + \left(\frac{12}{22} \times \frac{10}{21}\right)$ ✓ $= \frac{40}{77} \approx 0,52$ ✓ $\frac{20}{77} + \frac{20}{77}$ </p>	<p> $P(BG) + P(GB)$ ✓ $\left(\frac{10}{22} \times \frac{12}{21}\right)$ ✓ $\left(\frac{12}{22} \times \frac{10}{21}\right)$ ✓ ✓ answer / antwoord </p> <p>(3)</p>	<p>3</p>

10.3.1	$P(M) \times P(N)$ $= (0,12 + x)(0,57)$ $= 0,57x + 0,0684 \quad \checkmark$ <p>For independent events/<i>Vir onafhanklike gebeurtenisse</i></p> $P(M) \times P(N) = P(M \cap N)$ $0,57x + 0,0684 = 0,12 \quad \checkmark$ $0,57x = 0,0516$ $x = 0,09 \quad \checkmark$	$\checkmark 0,57x + 0,0684$ $\checkmark 0,57x + 0,0684 = 0,12$ $\checkmark \text{ answer / antwoord}$ (3)	3
10.3.2	$y = 1 - (0,09 + 0,12 + 0,45) \quad \checkmark$ $= 0,34 \quad \checkmark$ CA $1 - (x + 0,57)$ $= 1 - x - 0,57$ $= 0,43 - x$	$\checkmark 1 - (0,09 + 0,12 + 0,45)$ $\checkmark \text{ answer / antwoord}$ (2)	
		[16]	
		TOTAL/TOTAAL:	150