



**Western Cape
Government**

METRO NORTH EDUCATION DISTRICT

SCHOOL-BASED ASSESSMENT

SEPTEMBER TRIAL COMMON EXAMINATION

MATHEMATICS P1/ WISKUNDE V1

MARKING GUIDELINE/ NASIENRIGLYNE

SEPTEMBER 2025

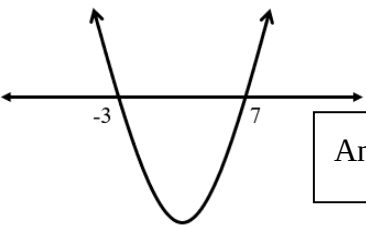
This Marking Guideline consists of 17 pages

NOTE:

- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out an attempt of a question and not redone the question, mark the crossed out version.
- Consistent accuracy applies in ALL aspects of the marking memorandum.
- Assuming answers/values in order to solve a problem is NOT acceptable.

NOTA:

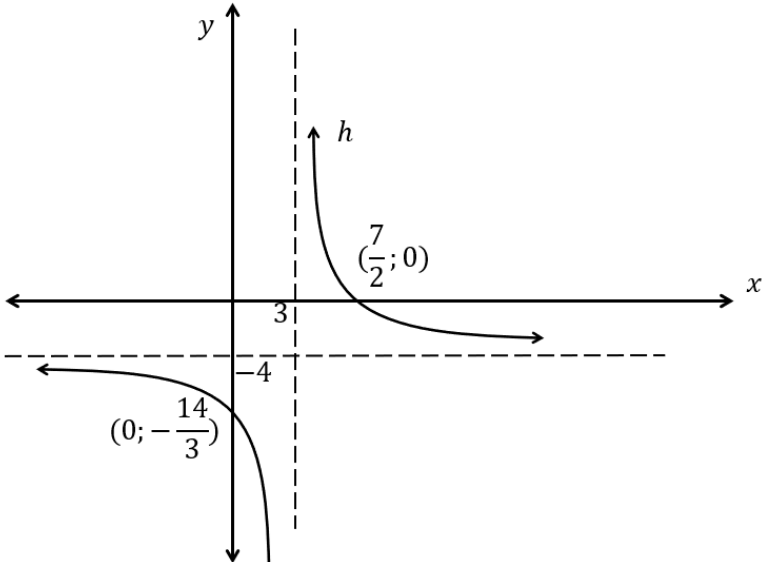
- As 'n kandidaat 'n vraag TWEEKEER beantwoord, merk slegs die EERSTE poging.
- As 'n kandidaat 'n poging om die vraag te beantwoord, doodgetrek het en nie dit oorgedoen het nie, merk die dood getrekte poging.
- Volgehoue akkuraatheid word in ALLE aspekte van die Nasien memorandum toegepas.
- Aanvaarding van antwoorde/waarde som 'n probleem op te los, is ONaanvaarbaar.

QUESTION 1		
1.1.1	$3x^2 - 7x - 6 = 0$ $(3x + 2)(x - 3) = 0$ $x = -\frac{2}{3}$ or $x = 3$ Answer only : $\frac{3}{3}$	✓ factors ✓ $x = -\frac{2}{3}$ ✓ $x = 3$ (3)
1.1.2	$2x^2 = 4 - 5x$ $2x^2 + 5x - 4 = 0$ $x = \frac{-(5) \pm \sqrt{(5)^2 - 4(2)(-4)}}{2(2)}$ $x = 0,64$ or $x = -3,14$ Answer only : $\frac{4}{4}$	✓ std form ✓ sub into correct formula ✓ $x = 0,64$ ✓ $x = -3,14$ (4)
1.1.3	$x^2 - 4x - 21 \leq 0$ $(x - 7)(x + 3) \leq 0$ CV: $x = 7$ or $x = -3$  Answer only : $\frac{2}{3}$ $-3 \leq x \leq 7$ OR/ OF $x \in [-3; 7]$	✓ factors / cv ✓✓ answer (3)

	$x^2 + y^2 - 2xy = 9 \dots \dots (2)$ Sub (1) into (2): $\left(\frac{-y+7}{2}\right)^2 + y^2 - 2y\left(\frac{-y+7}{2}\right) = 9$ $\frac{y^2 - 14y + 49}{4} + y^2 + y^2 - 7y - 9 = 0$ $y^2 - 14y + 49 + 4y^2 + 4y^2 - 28y - 36 = 0$ $9y^2 - 42y + 13 = 0$ $(3y - 1)(3y - 13) = 0$ $y = \frac{1}{3} \quad \text{or} \quad y = \frac{13}{3}$ $x = \frac{\frac{1}{3}+7}{2} \quad \quad \quad x = \frac{\frac{13}{3}+7}{2}$ $x = \frac{10}{3} \quad \quad \quad x = \frac{4}{3}$	✓ sub ✓ std form ✓ both y- values ✓ both x – values (5)
1.3	$9^x = 45^7 \cdot 15^{-y}$ $3^{2x} = (3^2 \cdot 5)^7 (3 \cdot 5)^{-y}$ $3^{2x} = 3^{14-y} \cdot 5^{7-y}$ $3^{2x} \cdot 5^0 = 3^{14-y} \cdot 5^{7-y}$ $\therefore y = 7$ $\therefore x = 3,5$ $x + y = 10,5$	✓ prime bases ✓ simplified ✓ y ✓ x ✓ answer (5)
		[23]

QUESTION 2 / VRAAG 2		
2.1.1	$T_n = a + (n - 1)d$ $167 = -7 + (n - 1)(6)$ $167 = 6n - 13$ $6n = 180$ $n = 30$	✓ sub into correct formula ✓ answer (2)
2.1.2	$S_n = \frac{n}{2}[2a + (n - 1)d]$ $8208 = \frac{n}{2}[2(-7) + (n - 1)(6)]$ $16\,416 = 6n^2 - 20n$ $6n^2 - 20n - 16\,416 = 0$ $(3n + 152)(2n - 108) = 0$ $n \neq -\frac{152}{3}$ or $n = 54$	✓ sub into correct formula ✓ std form ✓ factorization ✓ both answers with selection (4)
2.2.1	$T_n = ar^{n-1}$ $T_n = x\left(\frac{x}{2}\right)^{n-1}$	✓ r ✓ answer (2)
2.2.2	$-1 < r < 1$ $-1 < \frac{x}{2} < 1$ $-2 < x < 2$	✓ condition ✓ answer (2)
2.2.3	$x + \frac{x^2}{2} = \frac{5}{8}$ $8x + 4x^2 = 5$ $4x^2 + 8x - 5 = 0$ $(2x - 1)(2x + 5) = 0$ $x = \frac{1}{2}$ or $x \neq -\frac{5}{2}$ $\frac{1}{2} + \frac{1}{8} + \frac{1}{32} + \dots$ $S_\infty = \frac{\frac{1}{2}}{1 - r}$ $= \frac{\frac{1}{2}}{1 - \frac{1}{4}}$ $= \frac{2}{3}$	✓ equation ✓ std form ✓ answer with selection ✓ expansion ✓ sub ✓ answer (6)
2.3.1	$(2x - 1)^2$ or $4x^2 - 4x + 1$	✓ answer (1)
2.3.2	$r = 2x - 1$ $2x - 1 \neq 1$ $x \neq 1$	✓ r ✓ $r \neq 1$ ✓ answer (3)
		[20]

QUESTION 3 / VRAAG 3		
3.1	$T_n = 1 + (9 - 1)(0,75)$ $= 7 \text{ km}$	✓ sub a and d into correct formula ✓ answer (2)
3.2	Week in which 10 km will be run: $10 = 0,75n + 0,25$ $n = 13$ Weeks that Tania does not run 10 km = First 12 weeks $S_{12} = \frac{12}{2} [2(1) + (12 - 1)(0,75)]$ $= 61,5 \text{ km}$ $\therefore$ Total distance for 24 weeks = $S_{12} + 12(10)$ $= 61,5 + 120$ $= 181,5 \text{ km}$ OR/OF $10 = 0,75n + 0,25$ $n = 13$ $S_{13} = \frac{13}{2} [2(1) + (13 - 1)(0,75)]$ $= 71,5 \text{ km}$ Total distance = $S_{13} + 11(10)$ $= 71,5 + 110$ $= 181,5 \text{ km}$	✓ $T_n = 10$ ✓ n ✓ sub ✓ answer ✓ answer ✓ $T_n = 10$ ✓ n ✓ sub ✓ answer ✓ answer (5)
		[7]

QUESTION 4 / VRAAG 4		
4.1	$x = 3$ $y = -4$	$\checkmark x = 3$ $\checkmark y = -4$ (2)
4.2	$0 = \frac{2}{x-3} - 4$ $4 = \frac{2}{x-3}$ $4x - 12 = 2$ $4x = 14$ $x = \frac{7}{2}$	$\checkmark y = 0$ $\checkmark$ answer (2)
4.3		$\checkmark$ asymptotes $\checkmark$ x -intercept $\checkmark$ y -intercept $\checkmark$ shape (4)
4.4	$x < 3$ or $x \geq \frac{7}{2}$ OR/OF $(-\infty; 3) \cup [\frac{7}{2}; \infty)$	$\checkmark x < 3$ $\checkmark x \geq \frac{7}{2}$ (2)
		[10]

QUESTION 5 / VRAAG 5		
5.1	$B(-6; 0)$ $D(4; 0)$	$\checkmark B(-6; 0)$ $\checkmark D(4; 0)$ (2)
5.2	$c = 8$ $m = \frac{8 - 0}{0 - 4}$ $m = -2$	$\checkmark c = 8$ $\checkmark$ sub into m $\checkmark m = -2$ (3)
5.3	$(x - 4)(x + 6) = -2x + 8$ $x^2 + 2x - 24 + 2x - 8 = 0$ $x^2 + 4x - 32 = 0$ $(x + 8)(x - 4) = 0$ $x = -8$ or $x = 4$ $y = -2(-8) + 8$ $y = 24$ $A(-8; 24)$ $A'(24; -8)$	$\checkmark$ equation $\checkmark$ std form $\checkmark$ factors $\checkmark A(-8; 24)$ $\checkmark A'(24; -8)$ (5)
5.4	$f(x) = (x - 4)(x + 6)$ $f(x) = x^2 + 2x - 24$ $f'(x) = 2x + 2$ $m = -2$ $2x + 2 = -2$ $2x = -4$ $x = -2$ $y = (-2)^2 + 2(-2) - 24$ $y = -24$ $(-2; -24)$ $g(x) = -2x + 8 - k$ $(-2; -24): -24 = -2(-2) + 8 - k$ $k = 36$ OR/OF $x^2 + 2x - 24 = -2x + 8 - k$ $x^2 + 4x - 32 + k = 0$ $\Delta = (4)^2 - 4(1)(-32 + k)$ $-4k + 144 = 0$ $-4k = -144$ $k = 36$	$\checkmark f'(x) = 2x + 2$ $\checkmark 2x + 2 = -2$ $\checkmark (-2; -24)$ $\checkmark$ sub of $(-2; -24)$ $\checkmark k = 36$ $\checkmark$ equating $\checkmark$ std form $\checkmark$ discriminant $\checkmark$ condition $\checkmark$ answer (5)
		[15]

QUESTION 6/ VRAAG 6		
6.1	$3 = 2^0 + q$ $q = 2$	✓ substitution of (0; 3) ✓ $q = 2$ (2)
6.2	$k(x) = 2^x$ $x = 2^y$ $y = \log_2 x$	✓ $k(x)$ ✓ swop x and y ✓ $y = \log_2 x$ (3)
6.3.1	$0 < x \leq 1$ OR/OF (0; 1]	✓✓ answer (2)
6.3.2	$x > 6$ OR/OF (6; ∞)	✓✓ answer (2)
6.4	$h(x) = -2^{x+3} + 2$	✓ -2^{x+3} ✓ +2 (2)
		[11]

QUESTION 7/ VRAAG 7		
7.1	$A = P(1 - i)^n$ $A = 85\,000(1 - 0.085)^5$ $A = R\,54\,516,05$	✓ sub into correct formula ✓ answer (2)
7.2	$F_v = \frac{x[(1 + i)^n - 1]}{i}$ $180\,000 = \frac{4\,494,35[(1 + \frac{0,072}{12})^n - 1]}{\frac{0,072}{12}}$ $\frac{180\,000(\frac{0,072}{12})}{4\,494,35} + 1 = (1 + \frac{0,072}{12})^n$ $\log_{(1 + \frac{0,072}{12})} 1,2403017121 = n$ $n = 36 \text{ or } 37$	✓ $i = \frac{0,072}{12}$ ✓ sub into F_v ✓ correct use of logs ✓ answer (4)
7.3.1	Monthly instalment $P_v = \frac{x[1 - (1 + i)^{-n}]}{i}$ $350\,000 = \frac{x[1 - (1 + \frac{0,115}{12})^{-180}]}{\frac{0,115}{12}}$ $x = \frac{350\,000(\frac{0,115}{12})}{[1 - (1 + \frac{0,115}{12})^{-180}]}$ $x = R4088,66$ Outstanding balance after 5 years $P_v = \frac{4088,66[1 - (1 + \frac{0,115}{12})^{-120}]}{\frac{0,115}{12}}$ $P_v = R290\,810,28$ Outstanding balance after lump sum payment: $R290\,810,28 - R40\,000 = R\,250\,810,28$ OR/OF Monthly instalment	✓ $i = \frac{0,115}{12}$ ✓ $n = -180$ ✓ sub into P_v formula ✓ answer ✓ $n = -120$ ✓ answer

	$\frac{x[(1 + \frac{0,115}{12})^{180} - 1]}{\frac{0,115}{12}} = 350\,000 \left(1 + \frac{0,115}{12}\right)^{180}$ $x = \frac{350\,000 \left(1 + \frac{0,115}{12}\right)^{180} (\frac{0,115}{12})}{[(1 + \frac{0,115}{12})^{180} - 1]}$ $x = R4\,088,66$ Outstanding balance after 5 years $A - F$ $= 350\,000 \left(1 + \frac{0,115}{12}\right)^{60} - \frac{4088,66[(1 + \frac{0,115}{12})^{60} - 1]}{\frac{0,115}{12}}$ $= 290\,810,93$ Outstanding balance after lump sum payment: $R290\,810,93 - R40\,000 = R\,250\,810,93$	✓ $i = \frac{0,115}{12}$ ✓ n in both ✓ sub into F_v ✓ answer ✓ $n = 60$ ✓ $OB = R250\,810,93$ (6)
7.3.2	$250\,810,28 \left(1 + \frac{0,115}{12}\right)^8 = \frac{x[1 - (1 + \frac{0,115}{12})^{-112}]}{\frac{0,115}{12}}$ $x = \frac{250\,810,28 \left(1 + \frac{0,115}{12}\right)^8 (\frac{0,115}{12})}{[1 - (1 + \frac{0,115}{12})^{-112}]}$ $x = R3\,952,24$ OR/ OF $250\,810,28 \left(1 + \frac{0,115}{12}\right)^{120} = \frac{x[(1 + \frac{0,115}{12})^{112} - 1]}{\frac{0,115}{12}}$ $x = \frac{250\,810,28 \left(1 + \frac{0,115}{12}\right)^{120} (\frac{0,115}{12})}{[(1 + \frac{0,115}{12})^{112} - 1]}$ $x = R3\,952,24$	✓ $n=8$ in A formula ✓ $n = -112$ in P_v ✓ sub into both formula ✓ answer ✓ $n=120$ in A formula ✓ $n = 112$ in F_v ✓ sub into both formula ✓ answer (4)
		[16]

QUESTION 8

8.1	$f(x) = 3 - x^2$ $f(x + h) = 3 - (x + h)^2$ $= 3 - x^2 - 2xh - h^2$ $f(x + h) - f(x) = 3 - x^2 - 2xh - h^2 - (3 - x^2)$ $= -2xh - h^2$ $f'(x) = \lim_{h \rightarrow 0} \frac{-2xh - h^2}{h}$ $f'(x) = \lim_{h \rightarrow 0} \frac{h(-2x - h)}{h}$ $f'(x) = \lim_{h \rightarrow 0} -2x - h$ $f'(x) = -2x$ OR/OF $f'(x) = \lim_{h \rightarrow 0} \frac{f(x + h) - f(x)}{h}$ $f'(x) = \lim_{h \rightarrow 0} \frac{3 - (x + h)^2 - (3 - x^2)}{h}$ $f'(x) = \lim_{h \rightarrow 0} \frac{3 - x^2 - 2xh - h^2 - 3 + x^2}{h}$ $f'(x) = \lim_{h \rightarrow 0} \frac{-2xh - h^2}{h}$ $f'(x) = \lim_{h \rightarrow 0} \frac{h(-2x - h)}{h}$ $f'(x) = \lim_{h \rightarrow 0} -2x - h$ $f'(x) = -2x$	✓ $3 - x^2 - 2xh - h^2$ ✓ $-2xh - h^2$ ✓ sub into correct formula ✓ factor of h ✓ answer ✓ sub into correct formula ✓ $3 - x^2 - 2xh - h^2$ ✓ $-2xh - h^2$ ✓ factor of h ✓ answer
8.2.1	$\frac{d}{dx}(3x^4 - 7x^{-2})$ $= 12x^3 + 14x^{-3}$	✓ $12x^3$ ✓ $+14x^{-3}$
8.2.2	$f(x) = (2x^3 - 1)^2$ $= 4x^6 - 4x^3 + 1$ $f'(x) = 24x^5 - 12x^2$	✓ simplification ✓ $24x^5$ ✓ $12x^2$

8.2.3	$Dx \left[\frac{x^4 - m}{x^2 - \sqrt{m}} \right]$ $= Dx \frac{(x^2 + \sqrt{m})(x^2 - \sqrt{m})}{x^2 - \sqrt{m}}$ $= Dx(x^2 + \sqrt{m})$ $= 2x$	✓ <i>factors</i> ✓ <i>simplification</i> ✓ <i>answer</i> (3)
8.3.1	$f'(x) = 3ax^2 + 2bx$ $f'(-1) = 0$ $3a(-1)^2 + 2b(-1) = 0$ $3a - 2b = 0 \dots \dots \dots (1)$ $f(-1) = -1$ $a(-1)^3 + b(-1)^2 - 2 = -1$ $-a + b - 2 = -1$ $b = a + 1 \dots \dots \dots (2)$ $3a - 2(a + 1) = 0$ $3a - 2a - 2 = 0$ $a = 2$ $b = 2 + 1$ $b = 3$	✓ $f'(-1) = 0$ ✓ <i>equation 1</i> ✓ <i>equation 2</i> ✓ <i>method</i> (4)
8.3.2	$f'(x) = 6x^2 + 6x$ $f''(x) = 12x + 6$ $12x + 6 = 0$ $x = -\frac{1}{2}$ $x > -\frac{1}{2}$	✓ $f''(x) = 0$ ✓ x ✓ <i>answer</i> (3)
8.3.3	$-1 < x < 0 \text{ or } x > 0$ OR/OF $x > -1; x \neq 0$	✓ $-1 < x < 0$ ✓ $x > 0$ OR/OF ✓ $x > -1$ ✓ $x \neq 0$ (2)

8.4	$f(x) = -x^2 - 1$ Tangent AB: $m = f'(3)$ $f'(x) = -2x$ $f'(3) = -2(3)$ $= -6$ AB: $y = -6x + c$ $(3; -10): -10 = -6(3) + c$ $8 = c$ $\therefore y = -6x + 8$ Coordinate of B: $0 = -6x + 8$ $x = \frac{4}{3}$ $B(\frac{4}{3}; 0)$ and $T(3; 0)$ $BT = 1\frac{2}{3}$ $AT = 10$ $AB^2 = (10)^2 + \left(1\frac{2}{3}\right)^2$ $AB = 10,14$ OR/OF $f(x) = -x^2 - 1$ Tangent AB: $m = f'(3)$ $f'(x) = -2x$ $f'(3) = -2(3)$ $= -6$ AB: $y = -6x + c$ $(3; -10): -10 = -6(3) + c$ $8 = c$ $\therefore y = -6x + 8$ Coordinate of B: $0 = -6x + 8$ $x = \frac{4}{3}$ $B(\frac{4}{3}; 0)$ $AB = \sqrt{\left(3 - \frac{4}{3}\right)^2 + (-10 - 0)^2}$ $= 10,14$	✓ $f'(x) = -2x$ ✓ $f'(3) = -6$ ✓ c ✓ x – value of B ✓ sub in Pyth ✓ answer ✓ $f'(x) = -2x$ ✓ $f'(3) = -6$ ✓ c ✓ x – value of B ✓ sub in distance ✓ answer (6)
		[28]

QUESTION 9		
9.1	$h(2) = 9(2) - 2(2)^2$ $= 10m$	$\checkmark A$ (1)
9.2	Speed = $h'(x)$ $h'(x) = 9 - 4t$ $h'(2) = 9 - 4(2)$ $= 1m/s$	$\checkmark h'(x) = 9 - 4t$ $\checkmark h'(2)$ $\checkmark$ answer (3)
9.3	$9t - 2t^2 = 0$ $t(9 - 2t) = 0$ $t = 0$ or $t = 4.5$ $\therefore t = 4,5$	$\checkmark 9t - 2t^2 = 0$ $\checkmark t = 4,5$ (2)
		[6]

QUESTION 10		
10.1.1	$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ $0,73 = 0,55 + 0,4 - P(A \text{ and } B)$ $P(A \text{ and } B) = 0,22$ $P(A \text{ and } B) \neq 0$ $\therefore A \text{ and } B \text{ are not mutually exclusive}$	$\checkmark P(A \text{ and } B) = 0,22$ $\checkmark P(A \text{ and } B) \neq 0$ $\therefore A \text{ and } B \text{ are not mutually exclusive}$ (2)
10.1.2	$P(A) \times P(B) = 0,55 \times 0,4$ $= 0,22$ $P(A \text{ and } B) = 0,22$ $P(A \text{ and } B) = P(A) \times P(B)$ $\therefore A \text{ and } B \text{ are independent events}$	$\checkmark P(A) \times P(B) = 0,55 \times 0,4$ $\checkmark P(A) \times P(B) = 0,22$ $\checkmark P(A \text{ and } B) = P(A) \times P(B)$ $\therefore A \text{ and } B \text{ are independent events}$ (3)
10.2.1	$6 + 69 - x + 8 + x + 73 - x + 17 + 5 + 4 = 120$ $182 - x = 120$ $x = 62$	$\checkmark$ equation $\checkmark A$ (2)
10.2.2	$P(R \text{ and } C) = \frac{73}{120}$ or 0,6083 or 60,83%	$\checkmark \checkmark$ answer (2)
10.3.1	$\underline{26} \underline{26} \underline{10} \underline{9} \underline{8}$ $= 486\,720$	$\checkmark \underline{26} \underline{26}$ $\checkmark \underline{10} \underline{9} \underline{8}$ (2)
10.3.2	$\underline{1} \underline{25} \underline{6} \underline{5} \underline{2}$ $= 1500$ $\therefore$ There will not be enough codes for the sign ups	$\checkmark \underline{1} \underline{25}$ $\checkmark \underline{6} \underline{5} \underline{2}$ $\checkmark$ conclusion (3)
		[14]
	TOTAL 150	