



GAUTENG PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

PROVINSIALE EKSAMEN

JUNE/JUNIE 2024

GRADE/GRAAD 10

MARKING GUIDELINES

NASIENRIGLYNE

MATHEMATICS/WISKUNDE (PAPER/VRAESTEL 2)
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	INSTRUCTIONS/INSTRUKSIES:
	- If a candidate answers the question TWICE, only mark the first attempt. <i>As 'n kandidaat die vraag TWEE KEER beantwoord, sien slegs die eerste poging na.</i> - If a candidate has crossed out an attempted answer and not redone the answer, mark the crossed out version. <i>As 'n kandidaat 'n poging van 'n antwoord deurgehaal het en nie die antwoord oorgedoen het nie, sien die deurgehaalde weergawe na.</i> - Consistent accuracy applies in ALL aspects of the marking guidelines. Stop marking at the second calculation error. <i>Konsekwente akkuraatheid geld in ALLE aspekte van die nasienriglyne. Hou op nasien by die tweede berekeningsfout.</i> - Assuming answer/values to solve a problem is NOT acceptable. <i>Om antwoorde/waardes te aanvaar om 'n probleem op te los, is NIE aanvaarbaar nie.</i>
	GEOMETRY/MEETKUNDE
S	A mark for a correct statement (A statement mark is independent of a reason) <i>'n Punt vir 'n korrekte stelling</i> <i>('n Stellingpunt is onafhanklik van 'n rede)</i>
R	A mark for a correct reason (A reason mark only to be awarded if the statement is correct) <i>'n Punt vir 'n korrekte rede</i> <i>('n Redepunt moet slegs toegeken word indien die stelling korrek is)</i>
S/R	Award a mark if the statement AND the reason are both correct <i>Ken 'n punt toe as die stelling EN die rede albei korrek is</i>

QUESTION/VRAAG 1

	Suggested solution/Voorgestelde oplossing	Explanation/Verduideliking	
1.1	$AB = \sqrt{(x_A - x_B)^2 + (y_A - y_B)^2}$ $= \sqrt{(-5 - 4)^2 + (2 + 2)^2}$ $= \sqrt{97}$	✓ Formula/Formule ✓ Substitution/Vervanging ✓ Answer/Antwoord	(3)
1.2	$= M\left(\frac{x_A + x_B}{2}; \frac{y_A + y_B}{2}\right)$ $= M\left(\frac{-5 + 4}{2}; \frac{2 - 2}{2}\right)$ $= M\left(-\frac{1}{2}; 0\right)$	✓ Formula/Formule ✓ Substitution/Vervanging ✓ Answer/Antwoord	(3)
1.3	$m_{AB} = \frac{y_A - y_B}{x_A - x_B}$ $= \frac{2 - (-2)}{-5 - 4}$ $= -\frac{4}{9}$	✓ Formula/Formule ✓ Substitution/Vervanging ✓ Answer/Antwoord	(3)

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1.4	Horizontal transformation of 9 units to the right/ <i>Horisontale transformasie van 9 eenhede na regs</i>		✓ Answer/ <i>Antwoord</i>	(2)
				[11]
QUESTION/VRAAG 2				
2.1	2.1.1	$\sin A - \sin B$ $= \sin 78^\circ - \sin 34^\circ$ $= 0,42$	✓ Substitution/ <i>Vervanging</i> ✓ Answer/ <i>Antwoord</i>	(2)
	2.1.2	$\sqrt[3]{\sec A}$ $= \sqrt[3]{\frac{1}{\cos 78^\circ}}$ $= 1,69$	✓ $\frac{1}{\cos 78^\circ}$ ✓ Answer/ <i>Antwoord</i>	(2)
2.2	2.2.1	$r^2 = (-2)^2 + (-1)^2$ Pythagoras $\therefore r = \sqrt{5}$	✓ Substitution/ <i>Vervanging</i> ✓ Answer/ <i>Antwoord</i>	(2)
	2.2.2	$\sqrt{5} \cos \theta + 4 \operatorname{cosec}^2 \theta$ $= \sqrt{5} \cos \theta + \frac{4}{\sin^2 \theta}$ $= \sqrt{5} \left(-\frac{2}{\sqrt{5}}\right) + \frac{4}{\left(-\frac{1}{\sqrt{5}}\right)^2}$ $= 18$	✓ $\frac{1}{\sin^2 \theta}$ ✓ subs/ <i>verv</i> $-\frac{2}{\sqrt{5}}$ ✓ subs/ <i>verv</i> $\left(-\frac{1}{\sqrt{5}}\right)^2$ ✓ Answer/ <i>Antwoord</i>	(4)
2.3	$\frac{\sin 45^\circ}{\frac{\sqrt{2}}{2} \cdot \tan^2 30^\circ}$ $= \frac{\frac{1}{\sqrt{2}}}{\frac{\sqrt{2}}{2} \times \left(\frac{1}{\sqrt{3}}\right)^2}$ $= 3$		✓ $\frac{1}{\sqrt{2}}$ ✓ $\left(\frac{1}{\sqrt{3}}\right)^2$ ✓ Answer/ <i>Antwoord</i>	(3)
				[13]

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QUESTION/VRAAG 3			
3.1	Period/Periode = 360°	✓ Answer/Antwoord	(1)
3.2	$0^\circ \leq x \leq 90^\circ$ or/of $270^\circ \leq x \leq 360^\circ$ OR/OF $\therefore x \in [0^\circ; 90^\circ] \cup [270^\circ; 360^\circ]$	$\checkmark 0^\circ \leq x \leq 90^\circ$ $\checkmark 270^\circ \leq x \leq 360^\circ$ OR/OF $\checkmark x \in [0^\circ; 90^\circ]$ $\checkmark \cup [270^\circ; 360^\circ]$	(2)
3.3	$m(x) = -4f(x) + 1$ $m(x) = -4(\cos x) + 1$ $\therefore m(x) = -4\cos x + 1$ $\therefore y \in [-3; 5]$ OR/OF $-3 \leq y \leq 5$ OR/OF Range of f /Waardeversameling van f : $y \in [-1; 1]$ OR/OF $-1 \leq y \leq 1$ Range of m /Waardeversameling van m : $\therefore y \in [-3; 5]$ OR/OF $-3 \leq y \leq 5$	$\checkmark m(x) = -4\cos x + 1$ $\checkmark -3$ $\checkmark 5$ OR/OF $\checkmark$ range of f /Waardeversameling van f $\checkmark -3$ $\checkmark 5$	(3)
			[6]
QUESTION/VRAAG 4			
4.1	$\sin \beta = \frac{BD}{x}$ $\therefore BD = x \sin \beta$ $\tan \theta = \frac{BD}{AB}$ $\therefore AB = \frac{BD}{\tan \theta}$ $\therefore AB = \frac{x \sin \beta}{\tan \theta}$	$\checkmark$ correct trig ratio/ korrekte trig verhouding $\checkmark BD = x \sin \beta$ $\checkmark$ correct trig ratio/ korrekte trig verhouding $\checkmark AB = \frac{BD}{\tan \theta}$	(4)
4.2	$AB = \frac{12 \times \sin 40}{\tan 52}$ $AB = 6,02 \dots$ $AB = 6 \text{ m}$	$\checkmark$ Substitution/Vervanging $\checkmark$ Answer/Antwoord	(2)
			[6]

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QUESTION/VRAAG 5				
5.1	<u>parallel to the third side</u> and <u>equal to half the length of the third side</u> <u>ewewydig aan die derde sy en gelyk aan die helfte van die lengte van die derde sy</u>		✓ S ✓ S	(2)
5.2	5.2.1	BO = OD AO = OC diagonals of rhombus bisect at 90°/ <i>hoeklyne van ruit halveer by 90°</i> BC ² = CO ² + OB ² Pythagoras = 15 ² + 8 ² = 289 BC = 17	✓ S/R ✓ S ✓ Substitution/Vervanging ✓ Answer/Antwoord	(4)
	5.2.2	OF = $\frac{1}{2}$ CD midpoint theorem/ <i>middelpunt stelling</i> CD = BC <i>sides of a rhombus are equal/ sye van ruit is gelyk</i> OF = $\frac{17}{2}$	✓ S/R ✓ S ✓ Answer/Antwoord	(3)
	5.2.3	$\hat{B}_1 + \hat{B}_2 = \hat{OFC}$ <i>corresponding angles; AB OF ooreenkomstige hoeke = 64°</i> $\hat{B}_1 = \hat{B}_2$ diagonals of a rhombus bisect angles/ <i>hoeklyne van ruit halveer hoeke $\hat{B}_1 = 32^\circ$</i>	✓ S/R ✓ S ✓ R	(3)
5.3	Area of ABCD = $\frac{1}{2} \times BO \times OA \times 4$ = $\frac{1}{2} \times 15 \times 8 \times 4$ = 240 cm ²		✓ Method/Metode ✓ Answer/Antwoord	(2)
				[14]

		TOTAL/TOTAAL:	50
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