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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)

5 pages/*bladsye*

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

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

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

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QUESTION/*VRAAG* 5				
5.1		parallel to the third side and equal to half the length of the third side *ewewydig aan die derde sy en gelyk aan die helfte van die lengte van die derde sy*	✓ S ✓ S	(2)
5.2	5.2.1	BO = OD AO = OC diagonals of rhombus bisect at 90°/ *hoeklyne van ruit halveer by 90°* $BC^2 = CO^2 + OB^2$ 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/*middelpunt stelling* CD = BC *sides of a rhombus are equal/ sye van ruit is gelyk* OF = $\frac{17}{2}$	✓ S/R ✓ S ✓ Answer/*Antwoord*	(3)
	5.2.3	$\hat{B}_1 + \hat{B}_2 = O\hat{F}C$ *corresponding angles;* AB ∥ OF *ooreenkomstige hoeke* = 64° $\hat{B}_1 = \hat{B}_2$ diagonals of a rhombus bisect angles/ *hoeklyne van ruit halveer hoeke* $\hat{B}_1 = 32°$	✓ 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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