GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION / *GAUTENGSE DEPARTEMENT VAN ONDERWYS*

PROVINCIAL EXAMINATION / PROVINSIALE EKSAMEN

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GRADE / *GRAAD* 10

MATHEMATICS / *WISKUNDE*

PAPER / *VRAESTEL 2*

MEMORANDUM

6 pages / *bladsye*

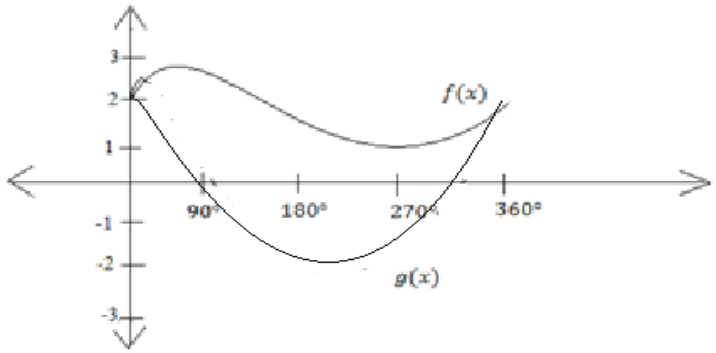
GAUTENG DEPARTMENT OF EDUCATION /
GAUTENGSE DEPARTEMENT VAN ONDERWYS

PREPARATORY EXAMINATION /
VOORBEREIDENDE EKSAMEN

MATHEMATICS / *WISKUNDE*
(Paper / *Vraestel 2*)

QUESTION 1 / ***VRAAG 1***		
1.1.1	$\cos\theta$ $=\frac{b}{c}$	✓ $\frac{b}{c}$ (1)
1.1.2	$\sin(90°-\theta)$ $=\frac{b}{c}$	✓ $\frac{b}{c}$ (1)
1.2.1	$r=5$ $\frac{1}{4}\sin^2\theta$ $=\frac{1}{4}\left(\frac{-4}{5}\right)^2$ $=\frac{4}{25}$	✓ $\frac{-4}{5}$ ✓ $\frac{4}{25}$ (2)
1.2.2	LHS / *LK* $\sec^2\theta-1$ $=\left(\frac{5}{3}\right)^2-1$ $=\frac{16}{9}$ RHS / *RK* $\tan^2\theta$ $=\left(\frac{-4}{3}\right)^2$ $=\frac{16}{9}$	✓ $\left(\frac{5}{3}\right)^2-1$ ✓ $\left(\frac{-4}{3}\right)^2$ ✓ $\frac{16}{9}$ (3)
		[7]

QUESTION 2 / ***VRAAG 2***		
2.1	2,34	✓answer / *antwoord* (1)
2.2	$\frac{\cos(2\theta-10°)}{2}=0,091$ $\cos(2\theta-10°)=0,184$ $2\theta-10°=79,4°$ $\theta=44,7°$ **ONLY PLACE IN PAPER WHERE LEARNER IS PENALIZED FOR INCORRECT ROUNDING OFF /** ***ENIGSTE PLEK IN VRAESTEL WAAR LEERDER GEPENALISEER WORD VIR VERKEERDE AFRONDING***	✓ $79,4°$ ✓ $44,7°$ (2)
2.3	$2\sin^2 60°-\sin 45°.\sec 45°+\frac{1}{4}\tan 10°.\cot 10°$ $=2\left(\frac{\sqrt{3}}{2}\right)^2-\left(\frac{\sqrt{2}}{2}\right).\left(\frac{2}{\sqrt{2}}\right)+\frac{1}{4}$ (1) $=2\left(\frac{3}{4}\right)-1+\frac{1}{4}$ $=\frac{3}{4}$	✓ $\frac{\sqrt{3}}{2}$ ✓ $\left(\frac{\sqrt{2}}{2}\right).\left(\frac{2}{\sqrt{2}}\right)$ ✓ 1 ✓ $\frac{3}{4}$ (4)
		[7]

QUESTION 3 / ***VRAAG 3***		
3.1		✓shape $f(x)$ / *vorm* $f(x)$ ✓turning points $f(x)$ / *draaipunte* $f(x)$ ✓shape $g(x)$ / *vorm* $g(x)$ ✓turning points $g(x)$ / *draaipunte* $g(x)$ (4)
3.2.1	$y \in [2\,;-2]$ OR / *OF* $-2 \le y \le 2$	✓answer / *antwoord* **OR/*OF*** ✓answer / *antwoord* (1)
3.2.2	$90° < x < 270°$	✓correct critical values / *korrekte kritieke waardes* ✓correct inequality / *korrekte ongelykheid* (2)
		[7]

QUESTION 4 / ***VRAAG 4***		
4.1	Midpoint RS/ *Middelpunt RS* = $(2;1)$	✓2 ✓1 (2)
4.2	$\frac{-2+x}{2}=2 \qquad \frac{1+y}{2}=1$ $x=6 \qquad y=1$ $T\,(6;1)$	✓ $\frac{-2+x}{2}=2$ and / *en* $\frac{1+y}{2}=1$ ✓ $x=6$ ✓ $y=1$ (3)
4.3	$RU=\sqrt{(2+2)^2+(5-1)^2}$ $=\sqrt{32}$	✓ $\sqrt{(2+2)^2+(5-1)^2}$ ✓ $\sqrt{32}$ (2)
4.4	$M_{RU}=\frac{1-5}{-2-2} \qquad M_{SP}=\frac{y+3}{x-2}=1$ $=1 \qquad y=x-5$ $SP=\sqrt{(x-2)^2+(y+3)^2}=2\sqrt{32}$ $\sqrt{x^2-4x+4+y^2+6y+9}=2\sqrt{32}$ $x^2-4x+13+(x-5)^2+6(x-5)=128$ $2x^2-8x-90=0$ $x^2-4x-45=0$ $(x-9)(x+5)=0$ $x=9$ or / *of* $x=-5$ $y=9-5 \qquad y=-5-5$ $y=4 \qquad y=-10$ P(9;4) P(−5;−10)	✓ $M_{RU}=1$ ✓ $y=x-5$ ✓ $\sqrt{(x-2)^2+(y+3)^2}$ ✓128 ✓substitute / *vervanging* ✓ $x^2-4x-45=0$ ✓ $x=9\,;x=-5$ ✓ $y=4\;;\;y=-10$ (8)
		[15]

QUESSTION 5 / ***VRAAG 5***			
5.1	parallelogram		✓answer / *antwoord* (1)
5.2.1	$E_1 = x$ $E_3 = 2x$ $x + 90° + 2x = 180°$ $x = 30°$	<'s opp equal sides / *<'e teenoor gelyke sye* <'s opp equal sides / *<'e teenoor gelyke sye* <'s straight line / *<'e op reguityn*	✓S/R ✓S ✓S ✓S (4)
5.2.2	A = 120° $C_1 = 60°$ $C_2 = 60°$ ∴ A = C ABCD is a parm	sum <'s Δ / *som vd <'e Δ* sum <'s Δ / *som vd <'e Δ* alt <'s AD||BC/ *verwis <'e AD||BC* opp <'s equal */ oorst <'e gelyk*	✓S ✓R ✓S ✓R (4)
			[9]

QUESTION 6 ***VRAAG 6***			
	$AO = OC = 2xy$ $BO = OD = x^2 - y^2$ $BO^2 + OC^2$ $= (x^2 - y^2)^2 + (2xy)^2$ $= x^4 - 2x^2y^2 + y^4 + 4x^2y^2$ $= x^4 + 2x^2y^2 + y^4$ $= (x^2 + y^2)^2$ BC^2 $= (x^2 + y^2)^2$ $\therefore BC^2 = BO^2 + OC^2$ BOC = 90° ABCD is a rhombus */ is 'n ruit*	given / *gegee* given / *gegee* pythagoras diagonals bisect at 90° / *diagonale halveer* 90°	✓ $AO = OC = 2xy$ $BO = OD = x^2 - y^2$ ✓ $(x^2 - y^2)^2 + (2xy)^2$ ✓ $(x^2 + y^2)^2$ ✓S/R ✓R (5)
			[5]
TOTAL / TOTAAL: 50			