

**GAUTENG DEPARTMENT OF EDUCATION /
GAUTENGSE DEPARTEMENT VAN ONDERWYS**

PROVINCIAL EXAMINATION / PROVINSIALE EKSAMEN

JUNE / JUNIE 2019

GRADE / GRAAD 10

MATHEMATICS / WISKUNDE

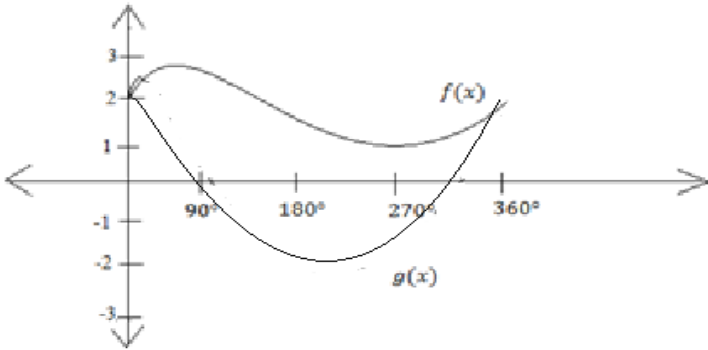
PAPER / VRAESTEL 2

MEMORANDUM

6 pages / bladsye

GAUTENG DEPARTMENT OF EDUCATION /
GAUTENGSE DEPARTEMENT VAN ONDERWYSPREPARATORY EXAMINATION /
VOORBEREIDENDE EKSAMENMATHEMATICS / WISKUNDE
(Paper / Vraestel 2)

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

QUESTION 3 / VRAAG 3		
3.1		<ul style="list-style-type: none"> ✓ shape $f(x)$ / <i>vorm $f(x)$</i> ✓ turning points $f(x)$ / <i>draaipunte $f(x)$</i> ✓ shape $g(x)$ / <i>vorm $g(x)$</i> ✓ turning points $g(x)$ / <i>draaipunte</i> <p style="text-align: right;">(4)</p>
3.2.1	$y \in [2 ; -2]$ OR / OF $-2 \leq y \leq 2$	<ul style="list-style-type: none"> ✓ answer / <i>antwoord</i> <p>OR/OF</p> <ul style="list-style-type: none"> ✓ answer / <i>antwoord</i> <p style="text-align: right;">(1)</p>
3.2.2	$90^\circ < x < 270^\circ$	<ul style="list-style-type: none"> ✓ correct critical values / <i>korrekte kritieke waardes</i> ✓ correct inequality / <i>korrekte ongelykheid</i> <p style="text-align: right;">(2)</p>
		[7]

QUESTION 4 /

VRAAG 4

4.1	Midpoint RS/ <i>Middelpunt RS</i> = (2;1)	$\checkmark 2$ $\checkmark 1$ (2)
4.2	$\frac{-2+x}{2} = 2$ $\frac{1+y}{2} = 1$ $x=6$ $y=1$ <i>T</i> (6;1)	$\checkmark \frac{-2+x}{2} = 2$ and / en $\frac{1+y}{2} = 1$ $\checkmark x=6$ $\checkmark y=1$ (3)
4.3	$RU = \sqrt{(2+2)^2 + (5-1)^2}$ $= \sqrt{32}$	$\checkmark \sqrt{(2+2)^2 + (5-1)^2}$ $\checkmark \sqrt{32}$ (2)
4.4	$M_{RU} = \frac{1-5}{-2-2}$ $M_{SP} = \frac{y+3}{x-2} = 1$ $= 1$ $y = x - 5$ $SP = \sqrt{(x-2)^2 + (y+3)^2} = 2\sqrt{32}$ $\sqrt{x^2 - 4x + 4 + y^2 + 6y + 9} = 2\sqrt{32}$ $x^2 - 4x + 13 + (x-5)^2 + 6(x-5) = 128$ $2x^2 - 8x - 90 = 0$ $x^2 - 4x - 45 = 0$ $(x-9)(x+5) = 0$ $x=9$ or / of $x=-5$ $y=9-5$ $y=-5-5$ $y=4$ $y=-10$ <i>P</i> (9;4) <i>P</i> (-5;-10)	$\checkmark M_{RU} = 1$ $\checkmark y = x - 5$ $\checkmark \sqrt{(x-2)^2 + (y+3)^2}$ $\checkmark 128$ \checkmark substitute / <i>vervanging</i> $\checkmark x^2 - 4x - 45 = 0$ $\checkmark x=9 ; x=-5$ $\checkmark y=4 ; y=-10$ (8)

[15]

**QUESTION 5 /
VRAAG 5**

5.1	parallelogram		✓ answer / <i>antwoord</i> (1)
5.2.1	$E_1 = x$ $E_3 = 2x$ $x + 90^\circ + 2x = 180^\circ$ $x = 30^\circ$	<'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	$A = 120^\circ$ $C_1 = 60^\circ$ $C_2 = 60^\circ$ $\therefore A = C$ ABCD is a parm	sum <'s Δ / <i>som vd <'e Δ</i> sum <'s Δ / <i>som vd <'e Δ</i> alt <'s $AD \parallel BC$ / <i>verwis <'e $AD \parallel BC$</i> opp <'s equal / <i>oorst <'e gelyk</i>	✓ 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 $= (x^2 + y^2)^2$ $\therefore BC^2 = BO^2 + OC^2$ $BOC = 90^\circ$ ABCD is a rhombus / <i>is 'n ruit</i>	given / <i>gegee</i> given / <i>gegee</i> pythagoras diagonals bisect at 90° / <i>diagonale halveer 90°</i>	✓ $AO = OC = 2xy$ ✓ $BO = OD = x^2 - y^2$ ✓ $(x^2 - y^2)^2 + (2xy)^2$ ✓ $(x^2 + y^2)^2$ ✓ S/R ✓ R (5)
			[5]
TOTAL / TOTAAL: 50			