α-MATHEMATICS

Alpha Wiskunde Graad 10 / *Alpha Mathematics Grade 10*

Kwartaal 3 Toets 2023 / *Term 3 Test 2023*

MEMORANDUM

Totaal / *Total*: 80 punte / *marks*

Eksaminator / *Examiner*: Lanice Liebenberg
Moderator: Rika Grobler

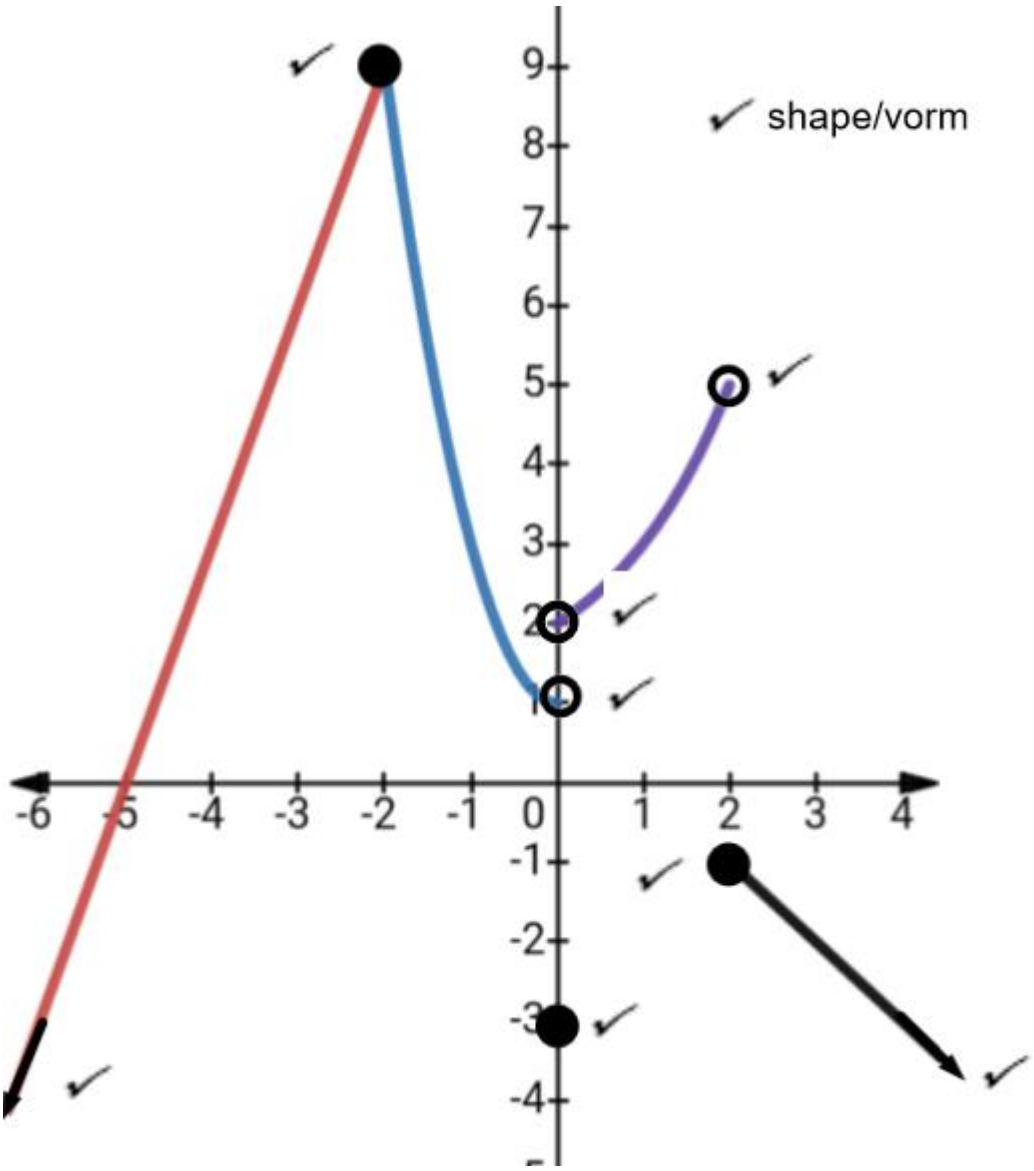
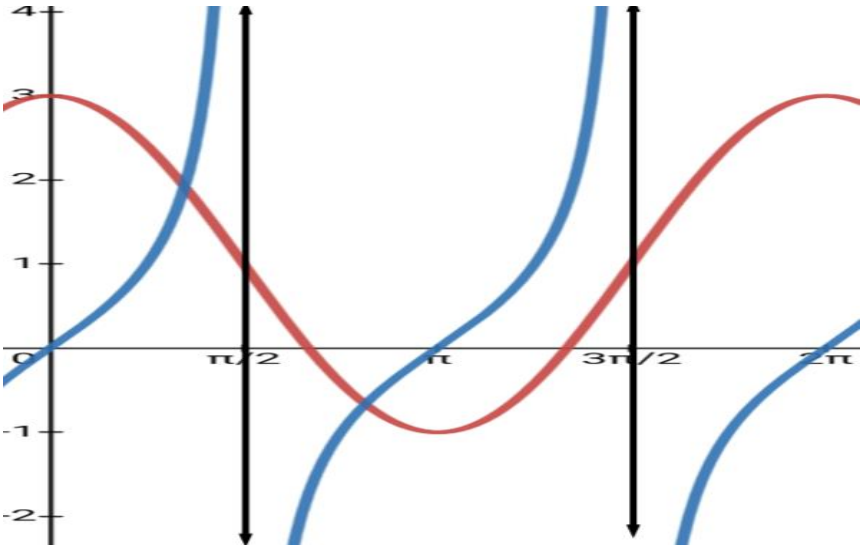
Hierdie memorandum bestaan uit 5 bladsye. /
This memorandum consists of 5 pages.

Vraag / *Question* 1 **[10 punte / *marks*]**

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D

Vraag / *Question* 2 **[36 punte / *marks*]**

NR. NO	ANTWOORD / *ANSWER*	PUNTE / *MARKS*
2.1.1	$(f \circ g)(x) = \frac{4}{(2x+1)^4}$ ✓ $- \sqrt{2x+1-1}$ ✓ $+ \frac{2x+1+1}{2}$ ✓ $(f \circ g)(x) = \frac{4}{(2x+1)^4} - \sqrt{2x} + x + 1$ ✓	**(4)**
2.1.2	$(g \circ g)(x) = 2(2x+1)$ ✓ $+ 1$ ✓ $(g \circ g)(x) = 4x + 3$ ✓	**(3)**
2.1.3	$(g \circ f)(x) = 2\left(\frac{4}{x^4} - \sqrt{x-1} + \frac{x+1}{2}\right) + 1$ ✓ $(g \circ f)(x) = \frac{8}{x^4} - 2\sqrt{x-1}$ ✓ $+ x + 2$ ✓	**(3)**
2.2.1	$f(x) = \sqrt[3]{x}$ ✓ $+ \frac{1}{x}$ ✓ $g(g) = x^2 + 6$ ✓	**(3)**
2.2.2	$f(x) = 7x^4$ ✓ $- \frac{3}{x^2}$ ✓ $+ x$ ✓ $g(x) = x - 1$ ✓	**(4)**

NR. NO	ANTWOORD / *ANSWER*	PUNTE / *MARKS*
2.3		**(9)**
2.4		g ✓**shape/vorm** ✓✓max & min f ✓**shape/vorm** ✓**asymptotes/ asymptote** ✓x –**int/afs** ✓**rad** **(6)**

NR. NO	ANTWOORD / *ANSWER*	PUNTE / *MARKS*
2.5.1	$\tan\frac{\pi}{6}=\frac{\sqrt{3}}{3}$ ✓✓	**(2)**
2.5.2	$\text{bg}\sin\frac{1}{\sqrt{2}}=\frac{\pi}{4}$ ✓✓	**(2)**

Vraag / *Question* 3 **[15 punte / *marks*]**

NR. NO	ANTWOORD / *ANSWER*	PUNTE / *MARKS*
3.1	$g'(x)=0$ ✓✓	**(2)**
3.2	$f(x)=3x\left(\frac{1}{x}-\frac{2x}{\sqrt{x}}+x^2\right)$ ✓ $f(x)=3-6x^{\frac{3}{2}}+3x^3$ ✓✓ $f'(x)=-9x^{\frac{1}{2}}$ ✓$+9x^2$ ✓	**(5)**
3.3	$k(x)=5x^{\frac{1}{2}}+3x^{-4}+2x$ ✓ $k'(x)=\frac{5}{2}x^{-\frac{1}{2}}$ ✓$-12x^{-5}$ ✓$+2$ ✓	**(4)**
3.4	$b'(x)=300$ ✓$(x^7-10x)^{99}$ ✓$.(7x^6$ ✓-10 ✓$)$	**(4)**

Vraag / *Question* 4 **[14 punte / *marks*]**

NR. NO	ANTWOORD / *ANSWER*	PUNTE / *MARKS*
4.1	$x^5 \checkmark + 7x \checkmark - x^3 \checkmark + c \checkmark$	**(4)**
4.2	$\frac{(15x^2+7)^{14} \checkmark}{14 \checkmark . (30x) \checkmark} + c \checkmark$	**(4)**
4.3	$\int_1^2 (2x^{-2} - 5x^5)dx \checkmark$ $= -2x^{-1} \checkmark - \frac{5x^6}{6} \Big\|_1^2 \checkmark$ $= \left(\frac{-2}{2} - \frac{5(2)^6}{6}\right) \checkmark - \left(-\frac{2}{1} - \frac{5(1)^6}{6}\right) \checkmark$ $= -\frac{103}{2} \checkmark$ $= -51{,}5$	**(6)**

Vraag / *Question* 5 **[5 punte / *marks*]**

NR. NO	ANTWOORD / *ANSWER*	PUNTE / *MARKS*
5.	$A = \int_0^4 \left(\sqrt{x} - x^2 + \frac{7}{2}x\right) dx$ $= \left[\frac{2x^{\frac{3}{2}}}{3} \checkmark - \frac{x^3}{3} \checkmark + \frac{7x^2}{4} \checkmark\right]_0^4$ $= \frac{2(4)^{\frac{3}{2}}}{3} - \frac{(4)^3}{3} + \frac{7(4)^2}{4} \checkmark$ $= 12 \checkmark$	**(5)**

- EINDE VAN DIE MEMORANDUM / *END OF THE MEMORANDUM* -