α-MATHEMATICS

Alpha Wiskunde Graad 10 / *Alpha Mathematics Grade 10*

Termyn 1 Toets 2021 / *Term 1 Test 2021*

MEMORANDUM

Totaal / *Total*: 50 punte / *marks*

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

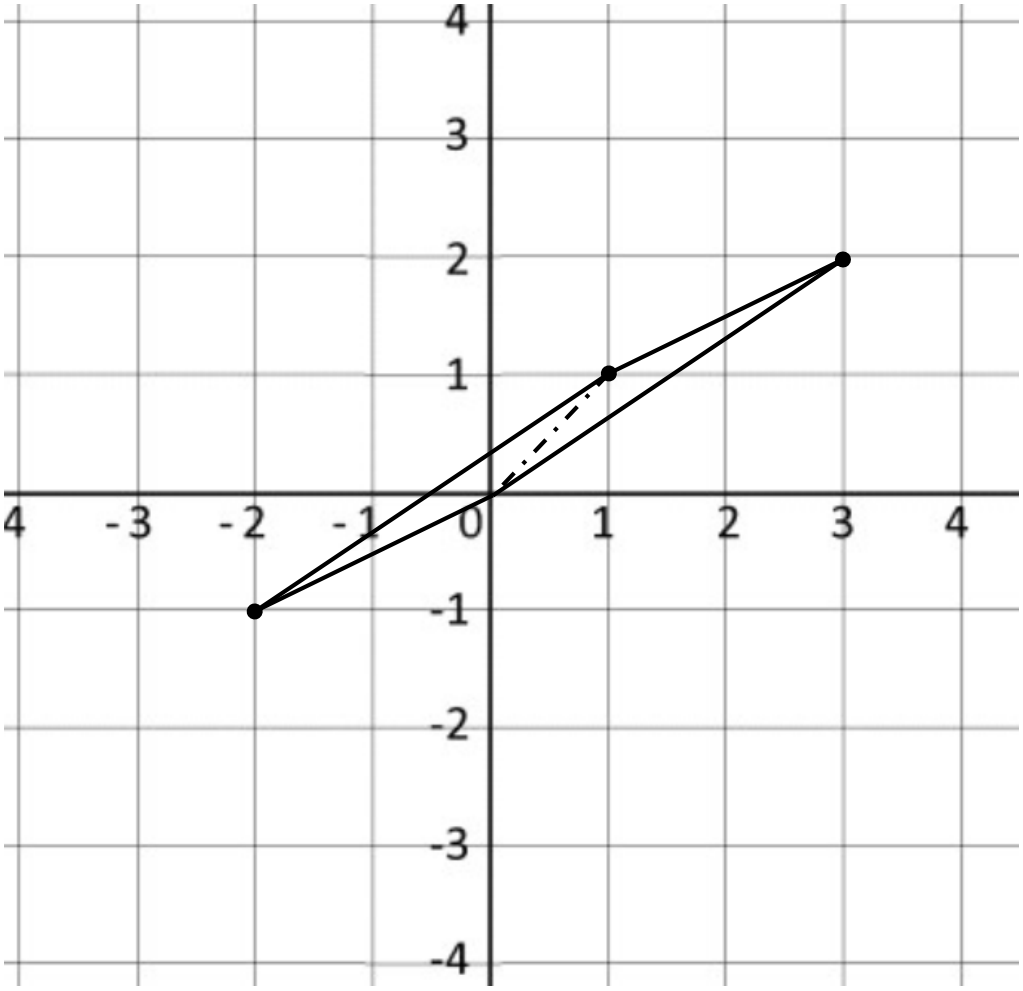
Hierdie memorandum bestaan uit 5 bladsye. /
This memorandum consists of 5 pages.

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

NR. NO	**ANTWOORD *ANSWER***	**BEREKENINGE (nie vir nasien doeleindes nie) *CALCULATIONS (not for marking purpose)***	**PUNTE *MARKS***
1.1	B	$\frac{3}{i} \times \frac{i}{i}$ $= \frac{3i}{i^2}$ $= -3i$	**(2)**
1.2	C	$\frac{A}{x} + \frac{B}{x^2} + \frac{C}{x+1}$	**(2)**
1.3	A	i^{207} $= i^3$ $= -i$	**(2)**
1.4	D	There are 3 rows and 2 columns.	**(2)**
1.5	B	$\begin{pmatrix} 0 & 3 \\ 1 & 4 \\ 2 & 5 \end{pmatrix} \begin{pmatrix} 2 & 4 & 6 \\ 3 & 5 & 7 \end{pmatrix}$ $= \begin{pmatrix} 9 & 15 & 21 \\ 14 & 24 & 34 \\ 19 & 33 & 47 \end{pmatrix}$	**(2)**

Vraag / *Question* 2 **[13 punte / *marks*]**

NR. NO	ANTWOORD / *ANSWER*	PUNTE / *MARKS*
2.1	$m^* = 3 - 2i$	**(1)**
2.2		**✓(3 ; 2)** **✓(-2 ; -1)** **✓✓(1 ; 1)** **✓shape/vorm** **(5)**
2.3	$(3 + 2i)(-2 - i)$ $= -6 - 7i - 2i^2$✓ $= -4 - 7i$✓✓	**(3)**
2.4	$\frac{m}{m^*}$ $= \frac{3+2i}{3-2i}$ ✓ $\times \frac{3+2i}{3+2i}$ ✓ $= \frac{5+4i}{13}$ ✓✓	**(4)**

Vraag / *Question* 3 **[9 punte / *marks*]**

ANTWOORD / *ANSWER*	PUNTE / *MARKS*
$\frac{6x^2+17x+13}{(x+2)^2(x-1)} \equiv \frac{A}{x+2} + \frac{B}{(x+2)^2} + \frac{C}{x-1}$✓ $6x^2 + 17x + 13 \equiv A(x+2)(x-1) + B(x-1) + C(x+2)^2$✓ Let $x = -2$ $3 = -3B$✓ $B = -1$✓ Let $x = 1$✓ $36 = 9C$ $C = 4$✓ $6x^2 + 17x + 13 \equiv Ax^2 + Ax - 2A + Bx - B + Cx^2 + 4Cx + 4C$✓ $6x^2 + 17x + 13 \equiv Ax^2 + Ax - 2A - x + 1 + 4x^2 + 16x + 16$ $A + 4 = 6$ $A = 2$✓ $\frac{6x^2+17x+13}{(x+2)^2(x-1)} \equiv \frac{2}{x+2} - \frac{1}{(x+2)^2} + \frac{4}{x-1}$✓	

Vraag / *Question* 4 **[10 punte / *marks*]**

NR. NO	ANTWOORD / *ANSWER*	PUNTE / *MARKS*
4.1	$Ax = b$ $\begin{pmatrix} 3 & 1 & -1 \\ 6 & 0 & 2 \\ 0 & 2 & 3 \end{pmatrix}\begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} 5 \\ 4 \\ 9 \end{pmatrix}$ ✓ ✓ ✓	**(3)**
4.2	$\begin{vmatrix} 3 & 1 & -1 \\ 6 & 0 & 2 \\ 0 & 2 & 3 \end{vmatrix} = 3\begin{vmatrix} 0 & 2 \\ 2 & 3 \end{vmatrix}$ ✓ $- 1\begin{vmatrix} 6 & 2 \\ 0 & 3 \end{vmatrix}$ ✓ $- 1\begin{vmatrix} 6 & 0 \\ 0 & 2 \end{vmatrix}$ ✓ $= -12 - 18 - 12$ $= -42$ ✓✓	**(5)**
4.4	$\frac{\det A_y}{\det A} = \frac{-162}{-42} = \frac{27}{7}$ ✓✓	**(2)**

Vraag / *Question* 5 **[8 punte / *marks*]**

NR. NO	ANTWOORD / *ANSWER*	PUNTE / *MARKS*
5.1	$x = r\theta$ ✓ $= 10\left(\frac{\pi}{6}\right)$ ✓ $\approx 5{,}24\ cm$ ✓	**(3)**
5.2	$Area = \pi r^2$ ✓ $- \frac{1}{2}r^2\theta$ ✓ $Area = \pi(10)^2$ ✓ $- \frac{1}{2}(10)^2\left(\frac{\pi}{6}\right)$ ✓ $\approx 288\ cm^2$ ✓	**(5)**

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