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GRADE 11

MATHEMATICS

GRADE 11

INFORMAL TEST 5

TERM 1

19 FEBRUARY 2024

MARKS: 25

DURATION: 30 MINUTES

This question paper consists of 3 pages.

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INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

- 1. This question paper consists of TWO questions.
- Answer ALL the questions.
- 3. Number the answers correctly according to the numbering system used in this question paper.
- 4. Clearly show ALL calculations, diagrams, graphs, etc. which you have used in determining your answers.
- 5. Answers only will NOT necessarily be awarded full marks.
- 6. You may use an approved scientific calculator (non-programmable and non-graphical), unless otherwise stated.
- 7. If necessary, round off answers to TWO decimal places, unless stated otherwise

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QUESTION 1

1.1 Solve for x, in each of the following:

$$1.1.1 \quad 2x^2 - 7x = 0 \tag{3}$$

1.1.2
$$2x(x-3) = 1$$
 (Leave your answer correct to TWO decimal places.) (4)

1.1.3
$$\sqrt{1+x} + 5 = x$$
 (5)

1.1.4
$$(x-3)(2-x) > 0$$
 (3)

1.2 Solve for x and y simultaneously

$$x^2 - 2xy - 3y^2 = 0$$
 and $3x + y - 2 = 0$ (6)

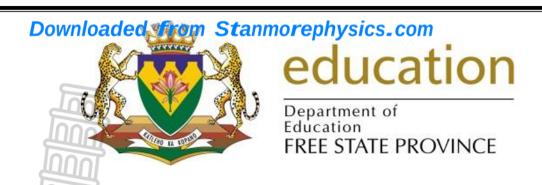
[21]

QUESTION 2

Simplify:

$$2.1 \qquad \frac{10^{n+3}.5^{n-1}}{50^{n+2}} \tag{4}$$

[4]



NATIONAL SENIOR CERTIFICATE

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2024 INFORMAL TEST 5

MARKING GUIDELINE

This marking guideline consists of 4 pages

QUESTIOn Downloaded from Stanmore physics.com

1.1.1	$2x^2 - 7x = 0$	$\sqrt{x} = 7$	2)
	2x(x-7)=0	$\checkmark x = 0 $ (2	-)
1.1.2	2x(x-3)=1		
	$2x^2 - 6x - 1 = 0$		
	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2}$		
	x =2a	✓ standard form	
	$x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(2)(-1)}}{2(2)}$		
	X = 2(2)	✓substitution	
	$X = \frac{6 \pm \sqrt{44}}{4}$	\checkmark x = $\frac{6 \pm \sqrt{44}}{4}$	
		4	
4.4.4	x = 3,16 or $x = -0,16$	√√ answers (4	
1.1.4		$\checkmark (x-3)(x-2) <$	U
	(x-3)(x-2) < 0 CV: 2 and 3	✓ ✓ solution (3	3)
1.1.3	$\sqrt{1+x} + 5 = x$,	
	$\sqrt{1+x} = x-5$		
	$\left(\sqrt{1+x}\right)^2 = \left(x-5\right)^2$		
		✓ squaring both sides	
	$ \begin{vmatrix} 1 + x = x^2 - 10x + 25 \\ x^2 - 11x + 24 = 0 \end{vmatrix} $	✓ standard form	
	(x-1)x+24=0 (x-8)(x-3)=0	✓ factors✓ both answers	
	x=8 or x=3	$\checkmark x = 8 $ (5)	
	$\therefore X = 8$		
1.2	$x^2 - 2xy - 3y^2 = 0$ and $3x + y - 2 = 0$		
	3x + y - 2 = 0 and(i)		
	and $x^2 - 2xy - 3y^2 = 0$ (ii)	\checkmark y = $-3x + 2$	
	$y = -3x + 2 \dots (iii)$	✓ subs.	
	$x^{2}-2x(-3x+2)-3(-3x+2)^{2}=0$	✓ standard form	
	$x^{2}-2x(-3x+2)-3(-3x+2)^{2}=0$	✓ factors✓ both x- values	
		✓ both y-values	
	$x^{2} + 6x^{2} - 4x - 3(9x^{2} - 12x + 4) = 0$		
	$7x^2 - 4x - 27x^2 + 36x - 12 = 0$	(6	6)
	$-20x^2 + 32x - 12 = 0$		-,
	$5x^2 - 8x + 3 = 0$		
	$(5x-1)(x-3)=0$ $x=\frac{1}{5} \text{ or } x=3$		
	$y = -3\left(\frac{1}{5}\right) + 2 = \frac{7}{5}$ or $y = -3(3) + 2 = -7$		
		[2:	1]

QUESTION Downloaded from Stanmore physics.com

2	$ \frac{10^{n+3} \cdot 5^{n-1}}{50^{n+2}} = \frac{(5 \times 2)^{n+3} \cdot 5^{n-1}}{(5^2 \times 2)^{n+2}} $ $ = \frac{(5 \times 2)^{n+3} \cdot 5^{n-1}}{(5^2 \times 2)^{n+2}} $ $ = \frac{5^{n+3} \times 2^{n+3} \cdot 5^{n-1}}{5^{2n+4} \cdot 2^{n+2}} $ $ = 5^{2n+2-(2n+4)} \cdot 2^{n+3-(n+2)} $ $ = 5^{2n+2-2n-4} \cdot 2^{n+3-n-2} $ $ = 5^{-2} \cdot 2 $ $ = \frac{2}{25} $		(4) [4]
		<u> </u>	