

GRADE : 10  
 SUBJECT : Maths  
 TITLE : June Exam  
 EXAMINER : Mr A. Slaughter  
 TOTAL MARKS : 100

DATE :      /      / 20    



TIME : 2 hour(s)

1.1.	$2^3 = 8$ ✓ $3^3 = 27$		1.4. 1.	$\frac{3x \cdot 4 - (x-2)}{4}$	
	$\therefore 2 < \sqrt[3]{25} < 3$ ✓	2		$= \frac{12x - x + 2}{4}$	
	$\frac{2, 3 \text{ only } 0/2}{D}$			$= \frac{11x + 2}{4}$ ✓	2
1.2.	1. $8 - 2(4x^2 - 3x)$				
	$= 8 - 8x^2 + 6x$ ✓	1	2	$\frac{5}{(x+1)(3x-2)} - \frac{\sqrt{2x+7}}{4(3x-2)}$	
				$= \frac{5 \cdot 4 - (2x+7)(x+1)}{4(x+1)(3x-2)}$	
	2. $x^2 + 2 + \frac{1}{x^2}$	2		$= \frac{20 - (2x^2 + 7x + 7)}{LCD}$	
1.3.	1. $x^2(2x+1) - 3(2x+1)$			$= \frac{20 - 2x^2 - 7x - 7}{LCD}$	
	$= (2x+1)(x^2 - 3)$ ✓	3		$= \frac{-2x^2 - 7x + 13}{4(x+1)(3x-2)}$ ✓	
	2. $(3x+2)(9x^2 - 6x + 4)$	2		$= \frac{-(2x^2 + 9x - 13)}{4(x+1)(3x-2)}$ ✓	4
				$b^2 - 4ac = (9)^2 - 4(2)(-13)$	
	3 $\frac{x^2 - 5x + 6}{2}$ ✓			$= 185$	
	$= \frac{(x-3)(x-2)}{2}$ ✓	2		$\neq ps$	
				$\therefore (x) \times$	
	$\frac{1}{2}(x^2 - 5x + 6)$ ✓				
	$= \frac{1}{2}(x-3)(x-2)$ ✓				

2.1.	1. $2x = \frac{10}{3}x + 15 = 8 \checkmark$	2.1.	5. $-(2x^2 + 5x - 12) = 0$	
	LCD = 3		$\div -1:$	
	$\times 3$		$2x^2 + 5x - 12 = 0 \checkmark$	
	$6x - 10x + 45 = 24$		$\therefore (2x - 3)(x + 4) = 0 \checkmark$	
	$-4x = -21$		$\therefore x = \frac{3}{2} \text{ or } -4 \checkmark$	3
	$x = \frac{21}{4} \checkmark$		$\rightarrow$	
	$\rightarrow$			
			6. $\sqrt[5]{x^4} = 10$	
2.	LCD = $(3x-2)(x+2)$		$(\sqrt[5]{x^4})^5 = (10)^5$	
	$(\therefore x \neq \frac{2}{3} \text{ and } -2)$		$x^4 = 100\,000$	
	$\times 6$		$x = \pm \sqrt[4]{100\,000} \checkmark$	
	$(3x+1)(x+2) = (x-2)(3x-2)$		$= \pm 17,78 \checkmark$	3
	$3x^2 + 7x + 2 = 3x^2 - 8x + 4$		$\rightarrow$	
	$15x = 2$		$\checkmark \checkmark$	
	$x = \frac{2}{15} \checkmark$		$\pm (10)^{\frac{4}{5}}$	
	$\rightarrow$			
			7. $\frac{3}{x^2} - 4x = 0$	
3.	$ax+a = -cx-c \checkmark$		LCD = $x^2$	
	$ax+cx = -a-c$		$(\therefore x \neq 0)$	
	$x(a+c) = -a-c$		$\times 3$	
	$x = \frac{-a-c}{a+c} \checkmark$		$3 - 4x^3 = 0$	
	$= \frac{-(a+c)}{a+c}$		$\frac{3}{4} = x^3 \checkmark$	
	$= -1 \checkmark$		$\sqrt[3]{\frac{3}{4}} = x \checkmark$	
	$\rightarrow$		$0,91 = \checkmark$	3
			$\rightarrow$	
4.	$3x^2 - x = 0 \checkmark$			
	$x(3x-1) = 0 \checkmark$			
	$x = 0 \text{ or } \frac{1}{3} \checkmark$			
	$\rightarrow$			
	$\div x \quad 0/3$			

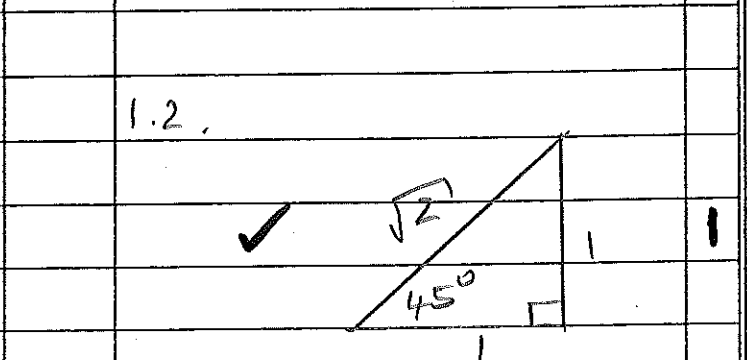
2.2.	1.	$-10 \leq -3x < 0 \checkmark$ $\frac{10}{3} \geq x > 0 \checkmark$ $\xrightarrow{\quad}$	2	3.1.	1.	$(y-3)^{n-1} x^{8/3}$ $x^4 \cdot y^{-8n+12}$ $= \frac{y^{-3n+3} x^{8/3} \checkmark}{x^4 \cdot y^{-8n+12} \checkmark}$ $= x^{\frac{8}{3}-4} y^{-3n+3-(-8n+12)}$ $= x^{-\frac{4}{3}} y^{-3n-3+8n-12}$ $= x^{-\frac{4}{3}} y^{5n-9}$ $\xrightarrow{\quad}$	4
	2.1.	$0 \checkmark$ ————— $10/3 \checkmark$ $0$ ————— $10/3$	2		2.	$\frac{y-x}{x^2-y^2} \checkmark$ $= (y-x) \times \frac{xy}{x^2-y^2}$ $= -(x-y) \times \frac{xy}{(x+y)(x-y)}$ $= -\frac{xy}{x+y} \checkmark$ $\xrightarrow{\quad}$	3
	2.2.	$x \in (0; \frac{10}{3}] \checkmark$ $\xrightarrow{\quad}$	2		3.2.	$6x^{\frac{4}{3}} + 7x^{\frac{2}{3}} - 3$ $k = x^{2/3} \quad k^2 = (x^{2/3})^2$ $= x^{4/3}$ $\therefore 6k^2 + 7k - 3$ $= (3k-1)(2k+3)$ $= (3x^{2/3}-1)(2x^{2/3}+3) \checkmark$ $\xrightarrow{\quad}$ var      num	2
2.3.		$2x - y = 17 \dots 1$ $3x + 4y = 9 \dots 2$					
	o	Sub <sup>n</sup>					
	(1)	$2x - 17 = y \checkmark$					
	(2)	$3x + 4(2x - 17) = 9 \checkmark$ $3x + 8x - 68 = 9$ $11x = 77$ $x = 7 \checkmark$ $\therefore y = 2(7) - 17$ $= -3 \checkmark$ $\xrightarrow{\quad}$	4				
	o	Elim <sup>n</sup>					
	(1)	$\times 4: 8x - 4y = 68 \checkmark$					
	(2)	$\times 1: 3x + 4y = 9$ $\hline 11x = 77 \checkmark$ $x = 7 \checkmark$ $2(7) - y = 17 \checkmark$ $-3 = y \checkmark$ $\xrightarrow{\quad}$					

3.3.	1.	$(2^4)^x = \sqrt{2^3}$		5.1.	1.	$\tan(3,25^\circ) = 10$	
		$\checkmark$ $\therefore 2^{4x} = 2^{3/2}$				$= \underline{-6,27}$ $\checkmark$	2
		$\therefore 4x = 3/2$					
		$x = 3/8$ $\checkmark$	3		2.	$(\sin 25^\circ)^2 + (\cos 25^\circ)^2$	
		$\underline{x = 3/8}$ $\checkmark$				$= \underline{1}$ $\checkmark$	2
		2. $3 \cdot 5^{2x} \cdot 5^{-1} - 5^{2x} = -2$					
		$\checkmark$ $5^{2x} (3 \cdot 5^{-1} - 1) = -2$		5.2.	1.	$\theta = \cos^{-1}(0,766)$	
cf		$5^{2x} (\frac{3}{5} - 1) = -2$				$= \underline{40^\circ}$ $\checkmark$	1
( )		$5^{2x} (-\frac{2}{5}) = -2$					
		$5^{2x} = -2 \div -\frac{2}{5}$					
		$= -2 \times -\frac{5}{2}$					
		$= 5$ $\checkmark$					
		$\therefore 2x = 1$				2.	$\sin \theta = \checkmark 0,287 \dots$
		$x = \frac{1}{2}$ $\checkmark$	4			$\theta = \sin^{-1}(0,287 \dots)$	
		$\underline{x = \frac{1}{2}}$ $\checkmark$				$= \underline{16,69^\circ}$ $\checkmark$	2
4.1.		$a = \checkmark 5$ $d = \checkmark -6$				3.	Let $A = 2(\theta + 15^\circ)$
		$T_n = a + (n-1)d$					$\tan A = 1$
		$= 5 + (n-1)(-6)$ $\checkmark$	3				$A = \tan^{-1}(1)$
		$\underline{= 5 + (n-1)(-6)}$ $\checkmark$					$= 45^\circ$
							$\therefore 2(\theta + 15^\circ) = \checkmark 45^\circ$
							$\theta = \checkmark 7,5^\circ$
							$\underline{\theta = 7,5^\circ}$ $\checkmark$
4.2.		$-283 = \checkmark 5 + (n-1)(-6)$					
		$49 = \checkmark n$	2				
		$\underline{49 = n}$ $\checkmark$					

5.3. 1.  $\sin 35^\circ = \frac{\sqrt{10}}{x}$   
 $\text{LCD} = x$   
 $(\because x \neq 0)$   
 $x \text{ thru}$   
 $x \cdot \sin 35^\circ = 10$   
 $x = \frac{10}{\sin 35^\circ}$   
 $= 17,43$

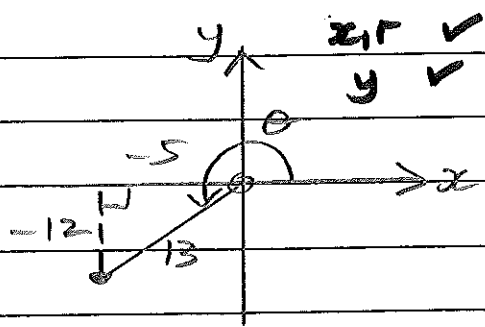
5.4. 2.  $\sin \theta = \frac{y}{r}$   
 $= \frac{-12}{13}$

2.  $\tan x = \frac{5}{8}$   
 $x = \tan^{-1} \left( \frac{5}{8} \right)$   
 $= 32,01^\circ$



5.4. 1.  $\cos \theta = -\frac{5}{13}$   
 $\cos - \therefore \text{II III}$   
 $180^\circ < \theta < 360^\circ \therefore \text{III IV}$   
 $\therefore \text{Q III} :$

2.1.  $\tan 30^\circ$   
 $= \frac{a}{b}$   
 $= \frac{1}{\sqrt{3}}$



2.2.  $\sin 45^\circ$   
 $= \frac{1}{\sqrt{2}}$

$-\frac{5}{13} = \frac{x}{r} = \frac{-5}{13}$   
 $(-5)^2 + y^2 = (13)^2$   
 $y^2 = 144$   
 $y = \pm 12$   
 $\therefore y = -12$

6.1.  $l_2: x = -2$  ✓

1

$l_1: (-5, 16) (3, 0)$

$$m = \frac{0 - 16}{3 - (-5)}$$

$$= -2 \quad \checkmark$$

$\therefore y = -2x + c$

sub  $(3, 0)$

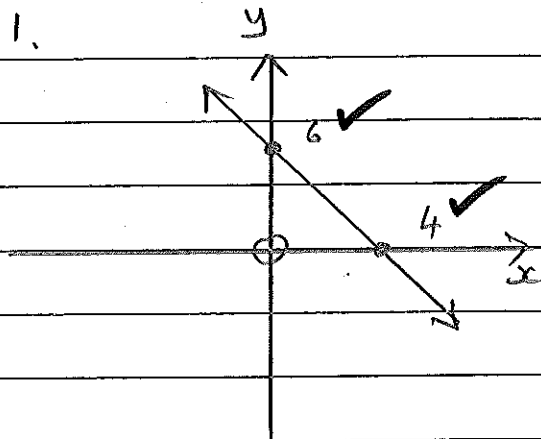
$0 = -2(3) + c \quad \checkmark$

$6 = c$

$\therefore y = -2x + 6$  ✓

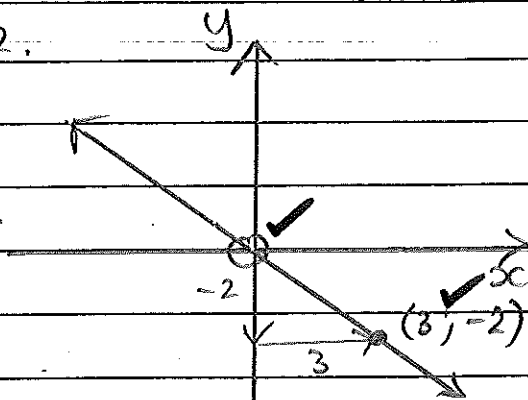
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6.2. 1.



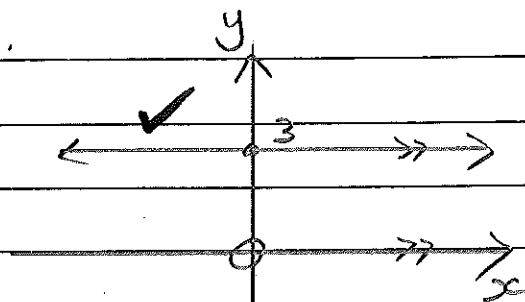
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6.2. 2.



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3.



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