

crashMATHS -

C1 PAPERS PRACTICE PAPER C



$x^2 + y^2 = 5$	
x = y + 1	
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	TOTAL 7 MARKS





Do not write outside the box

2 (a) Simplify $25^{-\frac{3}{2}}$ (b) Simplify		(2)
	$\left(\frac{25x^2(1-x)^2}{4}\right)^{\frac{3}{2}}$	
		(3)

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3 Find the set of values for x such that

(a)
$$x+2 \ge \frac{x}{2} - 3$$

(b)
$$x^2 < 6x - 8$$

(c)
$$x+2 \ge \frac{x}{2}-3$$
 and $x^2 < 6x-8$

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4 Given that $f(x) = x(x^2 - 16)$, on separate axis, sketch the graphs of

$$(a) \quad y = f(x) \tag{3}$$

(b)
$$y = f(2x)$$

(c)
$$y = f(x+3)$$

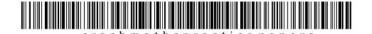
On each sketch, you should clearly indicate the coordinates of any points where the curve crosses or meets the coordinate axis. CM CM GM ĊM CM CM CM CM CM CMCM CM CM CM ĊΜ CM $\mathbb{G}M$ CM CM CM CM CMCM CM CM CM CM CM CM CM $\mathbb{C}M$ QΜ CM CM $\mathbb{C}\mathbf{M}$ CM (M) CM CM ĊM GM CM CM CM CM CM

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5 Express	
$\frac{2}{1+\sqrt{5}+\sqrt{6}}$	
$1 + \sqrt{5} + \sqrt{6}$	
in the form $a+b\sqrt{5}+c\sqrt{30}$, where a, b and c are constants to be found.	(7)
in the form a + by 5 + c y 50, where a, b and c are constants to be found.	(7)



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6	(a) Integrate	
	$\frac{x+\sqrt[3]{x}-3}{\sqrt[3]{x}}$	
	$\frac{3\sqrt{x}}{\sqrt[3]{x}}$	
	- 57 A 6	(=)
	with respect to x .	(5)
	(b) A curve is defined such that	
	$f'(x) = \frac{x + \sqrt[3]{x} - 3}{\sqrt[3]{x}}, x > 0$	
	Given that the curve passes through the point $(8,5)$, find y in terms of x .	(3)
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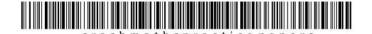
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8	The curve C has the equation		
		$y = \frac{(x-6)^2}{x}$, $x > 0$	
	Given that		
		$\left(\frac{x^4}{2}\right)\frac{d^2y}{dx^2} + x^3\frac{dy}{dx} + y + f(x) = 0$	
8	Find $f(x)$.		(9)
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An arithmetic progression has first term a and common difference d . The 2^{nd} term in the progression is 45.	
The sum of the first 20 terms in the progression is 1750.	
Find the values of a and d .	(6)



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10	$y = (2k-k^2)x^2 + (3-7k)x + 6k^4$	
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	Given that k is a negative constant	(5)
	(a) Work out the number of intersections the curve has with the x axis.	(5)
	(b) Solve the equation $(2k-k^2)x^2 + (3-7k)x + 6k^4 = 0$, giving your answer in the	
	form	
	$x = \frac{f(k) \pm \sqrt{g(k)}}{h(k)}$	(3)
	(c) Given that $k = -1$, sketch the curve in the space below.	
	On your sketch, you should show clearly the coordinates of the coordinates at	
	which the curve crosses the coordinate axis.	(3)
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