crashMATHS

C1 PAPERS

PRACTICE PAPER C

1 Solve the simultaneous equations

$$x^2 + y^2 = 5$$

$$x = y + 1$$

(7)

Question 1 continued

TOTAL 7 MARKS

2 (a) Simplify $25^{-\frac{3}{2}}$ **(2)**

(b) Simplify

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

(3)

Question 2 continued

TOTAL 5 MARKS

3 Find the set of values for x such that

(a) $x + 2 \geq \dfrac{x}{2} - 3$ **(2)**

(b) $x^2 < 6x - 8$ **(4)**

(c) $x + 2 \geq \dfrac{x}{2} - 3$ **and** $x^2 < 6x - 8$ **(1)**

Question 3 continued

TOTAL 7 MARKS

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

(a) $y = f(x)$ **(3)**

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

(c) $y = f(x+3)$ **(4)**
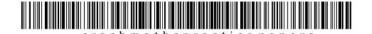
On each sketch, you should clearly indicate the coordinates of any points where the curve crosses or meets the coordinate axis.

Question 4 continued

TOTAL 9 MARKS

5 Express

$$\frac{2}{1+\sqrt{5}+\sqrt{6}}$$

in the form $a+b\sqrt{5}+c\sqrt{30}$, where a, b and c are constants to be found.

(7)

Question 5 continued

TOTAL 7 MARKS

6 (a) Integrate

$$\frac{x + \sqrt[3]{x} - 3}{\sqrt[3]{x}}$$

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)**

Question 6 continued

Question 6 continued

Question 6 continued

TOTAL 8 MARKS

7 The points A and B have the coordinates $(2, 3)$ and $(-5, 6)$ respectively.

Find the equation of the perpendicular bisector of AB. **(6)**

Question 7 continued

TOTAL 6 MARKS

8 The curve C has the equation

$$y = \frac{(x-6)^2}{x} \ , \ x > 0$$

Given that

$$\left(\frac{x^4}{2}\right)\frac{d^2y}{dx^2} + x^3\frac{dy}{dx} + y + f(x) = 0$$

Find $f(x)$. **(9)**

Question 6 continued

Question 8 continued

Question 8 continued

TOTAL 9 MARKS

9 An arithmetic progression has first term a and common difference d.

The 2nd 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)**

Question 9 continued

TOTAL 6 MARKS

10

$$y = (2k - k^2)x^2 + (3 - 7k)x + 6k^4$$

Given that k is a **negative** constant

(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)**

Question 10 continued

Question 10 continued

Question 10 continued