Edexcel Maths C1

Topic Questions from Papers

Algebra & Functions

Leave blank

1. (a) Write down the value of $8^{\frac{1}{3}}$.

(1)

(b) Find the value of $8^{-\frac{2}{3}}$.

(2)

Q1

(Total 3 marks)

Leave blank

1. Factorise completely

$$x^3 - 4x^2 + 3x.$$

(3)

Q1

(Total 3 marks)

Leave blank

5. (a) Write $\sqrt{45}$ in the form $a\sqrt{5}$, where a is an integer.

(1)

(b) Express $\dfrac{2(3+\sqrt{5})}{(3-\sqrt{5})}$ in the form $b + c\sqrt{5}$, where b and c are integers.

(5)

Leave blank

6. (a) Expand and simplify $(4 + \sqrt{3})(4 - \sqrt{3})$.

(2)

(b) Express $\frac{26}{4+\sqrt{3}}$ in the form $a + b\sqrt{3}$, where a and b are integers.

(2)

Leave blank

2. (a) Express $\sqrt{108}$ in the form $a\sqrt{3}$, where a is an integer.

(1)

(b) Express $(2 - \sqrt{3})^2$ in the form $b + c\sqrt{3}$, where b and c are integers to be found.

(3)

Q2

(Total 4 marks)

Leave blank

6. (a) Show that $(4 + 3\sqrt{x})^2$ can be written as $16 + k\sqrt{x} + 9x$, where k is a constant to be found.

(2)

(b) Find $\int (4+3\sqrt{x})^2 \, dx$.

(3)

Q6

(Total 5 marks)

Leave blank

10. (a) On the same axes sketch the graphs of the curves with equations

(i) $y = x^2(x - 2)$,

(3)

(ii) $y = x(6 - x)$,

(3)

and indicate on your sketches the coordinates of all the points where the curves cross the x-axis.

(b) Use algebra to find the coordinates of the points where the graphs intersect.

(7)

Leave blank

Question 10 continued

Q10

(Total 13 marks)

TOTAL FOR PAPER: 75 MARKS

END

Leave blank

1. Simplify $(3+\sqrt{5})(3-\sqrt{5})$.

(2)

Q1

(Total 2 marks)

Leave blank

2. (a) Find the value of $8^{\frac{4}{3}}$.

(2)

(b) Simplify $\frac{15x^{\frac{4}{3}}}{3x}$.

(2)

Q2

(Total 4 marks)

Leave blank

2. (a) Write down the value of $16^{\frac{1}{4}}$.

(1)

(b) Simplify $(16x^{12})^{\frac{3}{4}}$.

(2)

Q2

(Total 3 marks)

Leave blank

3. Simplify

$$\frac{5-\sqrt{3}}{2+\sqrt{3}},$$

giving your answer in the form $a + b\sqrt{3}$, where a and b are integers.

(4)

Q3

(Total 4 marks)

Leave blank

2. Factorise completely

$$x^3 - 9x.$$

(3)

Q2

(Total 3 marks)

Leave blank

1. (a) Write down the value of $125^{\frac{1}{3}}$.

(1)

(b) Find the value of $125^{-\frac{2}{3}}$.

(2)

Q1

(Total 3 marks)

Leave blank

3. Expand and simplify $(\sqrt{7} + 2)(\sqrt{7} - 2)$.

(2)

Q3

(Total 2 marks)

Leave blank

1. Simplify

(a) $\left(3\sqrt{7}\right)^2$

(1)

(b) $\left(8+\sqrt{5}\right)\left(2-\sqrt{5}\right)$

(3)

Q1

(Total 4 marks)

Leave blank

2. Given that $32\sqrt{2} = 2^a$, find the value of a.

(3)

Q2

(Total 3 marks)

Leave blank

2. (a) Expand and simplify $(7 + \sqrt{5})(3 - \sqrt{5})$.

(3)

(b) Express $\frac{7+\sqrt{5}}{3+\sqrt{5}}$ in the form $a + b\sqrt{5}$, where a and b are integers.

(3)

Q2

(Total 6 marks)

Leave blank

1. Write

$$\sqrt{(75)} - \sqrt{(27)}$$

in the form $k\sqrt{x}$, where k and x are integers.

(2)

Q1

(Total 2 marks)

Leave blank

1. (a) Find the value of $16^{-\frac{1}{4}}$

(2)

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

(2)

Q1

(Total 4 marks)

Leave blank

3. Simplify

$$\frac{5-2\sqrt{3}}{\sqrt{3}-1}$$

giving your answer in the form $p+q\sqrt{3}$, where p and q are rational numbers.

(4)

Leave blank

1. Find the value of

(a) $25^{\frac{1}{2}}$

(1)

(b) $25^{-\frac{3}{2}}$

(2)

Q1

(Total 3 marks)

Leave blank

2. (a) Simplify

$$\sqrt{32}+\sqrt{18}$$

giving your answer in the form $a\sqrt{2}$, where a is an integer.

(2)

(b) Simplify

$$\frac{\sqrt{32}+\sqrt{18}}{3+\sqrt{2}}$$

giving your answer in the form $b\sqrt{2}+c$, where b and c are integers.

(4)

Leave blank

2. (a) Evaluate $(32)^{\frac{3}{5}}$, giving your answer as an integer.

(2)

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

(2)

Q2

(Total 4 marks)

Leave blank

2. (a) Evaluate $(32)^{\frac{3}{5}}$, giving your answer as an integer.

(2)

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

(2)

Q2

(Total 4 marks)

Leave blank

3. Show that $\frac{2}{\sqrt{(12)}-\sqrt{(8)}}$ can be written in the form $\sqrt{a} + \sqrt{b}$, where a and b are integers.

(5)

Leave blank

8. $4x - 5 - x^2 = q - (x + p)^2$

where p and q are integers.

(a) Find the value of p and the value of q.

(3)

(b) Calculate the discriminant of $4x - 5 - x^2$

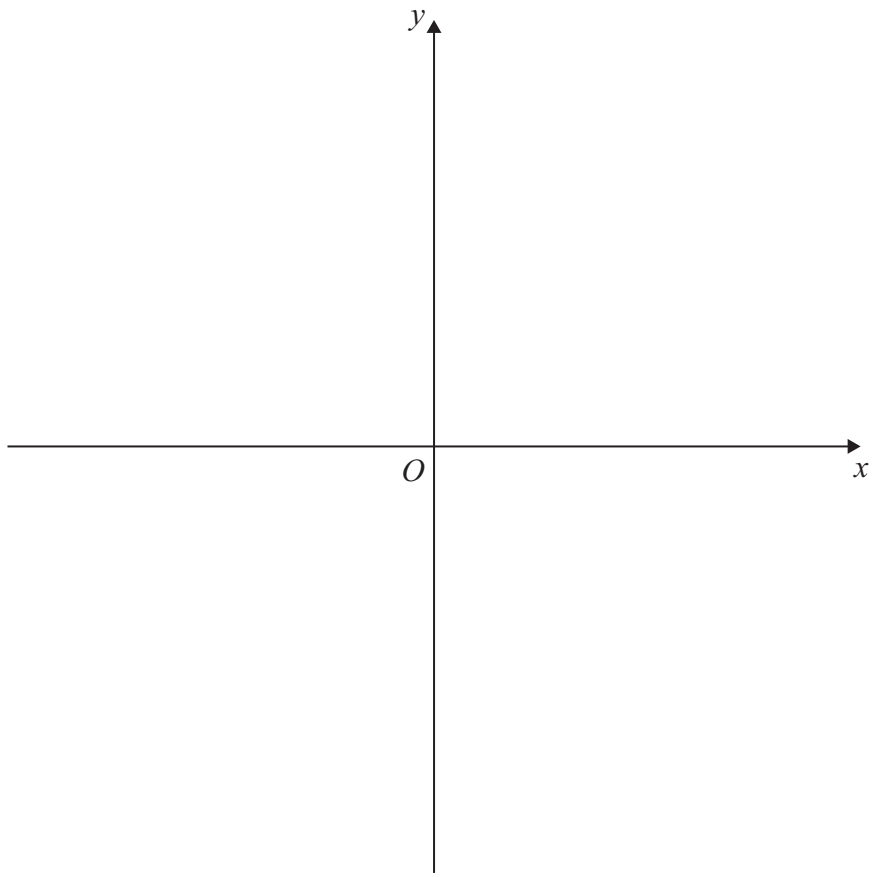
(2)

(c) On the axes on page 17, sketch the curve with equation $y = 4x - 5 - x^2$ showing clearly the coordinates of any points where the curve crosses the coordinate axes.

(3)

Leave blank

Question 8 continued



Q8

(Total 8 marks)

Leave blank

1. Factorise completely $x - 4x^3$

(3)

Q1

(Total 3 marks)

Leave blank

2. Express 8^{2x+3} in the form 2^y, stating y in terms of x.

(2)

Q2

(Total 2 marks)

Leave blank

3. (i) Express

$$\left(5 - \sqrt{8}\right)\left(1 + \sqrt{2}\right)$$

in the form $a + b\sqrt{2}$, where a and b are integers.

(3)

(ii) Express

$$\sqrt{80} + \frac{30}{\sqrt{5}}$$

in the form $c\sqrt{5}$, where c is an integer.

(3)

Leave blank

2. Express $\frac{15}{\sqrt{3}} - \sqrt{27}$ in the form $k\sqrt{3}$, where k is an integer.

(4)

Q2

(Total 4 marks)

Leave blank

5. Solve

(a) $2^y = 8$

(1)

(b) $2^x \times 4^{x+1} = 8$

(4)

Leave blank

1. Simplify

$$\frac{7 + \sqrt{5}}{\sqrt{5} - 1}$$

giving your answer in the form $a + b\sqrt{5}$, where a and b are integers.

(4)

Q1

(Total 4 marks)

Leave blank

3. (a) Find the value of $8^{\frac{5}{3}}$

(2)

(b) Simplify fully $\dfrac{\left(2x^{\frac{1}{2}}\right)^3}{4x^2}$

(3)

Core Mathematics C1

Mensuration

Surface area of sphere = $4\pi r^2$

Area of curved surface of cone = $\pi r \times$ slant height

Arithmetic series

$u_n = a + (n - 1)d$

$S_n = \frac{1}{2}n(a + l) = \frac{1}{2}n[2a + (n - 1)d]$