The Factor Theorem

Revise this topic →

← Check your work

This booklet features original exam style questions designed by me. They do not feature in past papers but are good practice for your exams.

The content is designed to reflect the style of the AQA Level 2 Certificate in Further Maths.
It may not be suitable for other courses.

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Answer **all** questions in the spaces provided.

1 $f(x) = x^3 + 5x^2 + 2x - 8$

1 (a) Use the factor theorem to show that $(x + 4)$ is a factor of $f(x)$.

[2 marks]

1 (b) Hence, fully factorise $f(x)$.

[3 marks]

Answer _____

Do not write outside the box

2 $f(x) = 2x^3 + 13x^2 + 13x - 10$

2 (a) Use the factor theorem to show that $(2x - 1)$ is a factor of $f(x)$.

[2 marks]

2 (b) Hence, fully factorise $f(x)$.

[3 marks]

Answer _____

10

Turn over ►

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3 $f(x) = x^3 - 5x^2 - 2x + 24$

3 (a) Use the factor theorem to show that $(x + 2)$ is a factor of $f(x)$.

[2 marks]

3 (b) Hence solve $f(x) = 0$

[3 marks]

Answer _____

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4 $f(x) = 4x^3 - 11x^2 + 5x + 2$

4 (a) Use the factor theorem to show that $(4x + 1)$ is a factor of $f(x)$.

[2 marks]

4 (b) Hence solve $f(x) = 0$

[3 marks]

Answer _____

10

Turn over ►

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5 $f(x) = 3x^3 - 10x^2 + 4x + 8$

5 (a) Use the factor theorem to show that $(x - 2)$ is a factor of $f(x)$.

[2 marks]

5 (b) Hence solve $f(x) = 0$

[3 marks]

Answer _____

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6 $f(x) = x^3 + ax^2 - 21x - 18$

6 (a) $(x + 3)$ is a factor of $f(x)$. Find the value of a.

[3 marks]

$a =$ _____

6 (b) Hence, fully factorise $f(x)$.

[3 marks]

Answer _____

10

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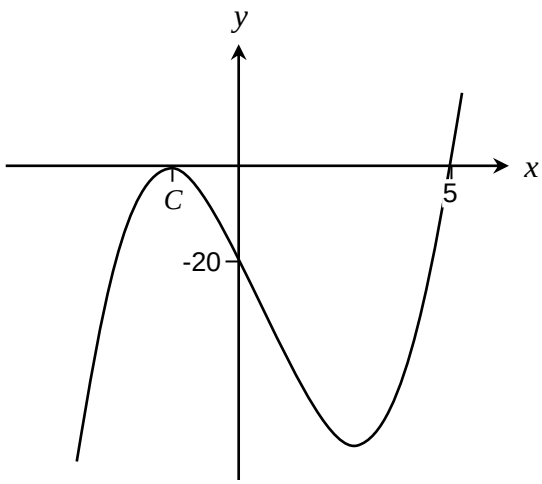
7 A sketch of the graph $y = x^3 - x^2 + px + q$ is shown.



7 (a) Write down the value of q. **[1 mark]**

$q =$ _____

7 (b) Work out the value of p. **[3 marks]**

$p =$ _____

7 (c) The graph touches the x-axis at the point C.
Work out the x coordinate of the point C. **[3 marks]**

Answer _____

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8 $f(x) = 2x^3 + 11x^2 + ax + b$

8 (a) $(x - 2)$ and $(x + 6)$ are factors of $f(x)$. Find the values of a and b. **[4 marks]**

$a =$ _____ $b =$ _____

8 (b) Solve $f(x) = 0$ **[3 marks]**

Answer _____

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