



Algebraic Methods

Questions

Suitable for:

Pearson Edexcel International A-Level (iAL) — Pure Mathematics 3



Question 1

Simplify fully

$$\frac{x^2 + 5x + 6}{x^2 + x - 6}$$

(3 marks)

Total for question = 3 marks



Question 2

Simplify fully

$$\frac{x^2 - 1}{x + 2} \div \frac{x^2 - x}{x^2 + 3x + 2}$$

(4 marks)

Total for question = 4 marks



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Question 3

Express

$$\frac{3}{x+2} - \frac{2}{x-1}$$

as a single fraction in its simplest form.

(3 marks)

Total for question = 3 marks



Question 4

Given that

$$\frac{x^3 + 2x^2 - 3x + 1}{x - 1} \equiv x^2 + ax + b + \frac{c}{x - 1}$$

find the values of the constants a , b and c .

(4 marks)

Total for question = 4 marks





Question 5

Express

$$\frac{x^2 + 3x + 5}{x + 2}$$

in the form

$$Ax + B + \frac{C}{x + 2}$$

where A , B and C are constants to be found.

(4 marks)

Total for question = 4 marks





Question 6

Show that

$$\frac{2x^2 + 5x - 1}{x^2 + x - 2}$$

can be written in the form

$$A + \frac{Bx + C}{(x + 2)(x - 1)}$$

and find the values of the constants A , B and C .

(5 marks)

Total for question = 5 marks



Question 7

Express

$$\frac{x^3 - x^2 + 2}{x - 2}$$

in the form

$$Ax^2 + Bx + C + \frac{D}{x - 2}$$

where A , B , C and D are constants to be found.

(4 marks)

Total for question = 4 marks





Question 8

Express

$$\frac{5x}{x^2 - 1} - \frac{3}{x + 1}$$

as a single fraction in its simplest form.

(4 marks)

Total for question = 4 marks



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