

A52 (H) Algebraic Fractions - Multiplying and Dividing

OCR

Edexcel

14 Write

Video created by W Neill

$$4 - \left[(x + 3) \div \frac{x^2 + 5x + 6}{x - 2} \right]$$

as a single fraction in its simplest form.
You must show your working.

.....
(Total for Question 14 is 4 marks)

Video created by W Neill

(b) Show that $\frac{1}{2x^2 + x - 15} \div \frac{1}{3x^2 + 9x}$ simplifies to $\frac{ax}{bx + c}$ where a , b and c are integers.

(3)

(Total for Question 17 is 5 marks)

14 Write

Video created by W Neill

$$4 - \left[(x+3) \div \frac{x^2+5x+6}{x-2} \right]$$

as a single fraction in its simplest form.
You must show your working.

Factorise

$$x^2 + 5x + 6$$

$$= (x+3)(x+2)$$

$$\begin{array}{r} +6 \\ +3 \quad +2 \end{array}$$

$$\frac{4}{1} - \frac{x-2}{x+2}$$

$$\frac{4(x+2)}{1(x+2)} - \frac{x-2}{x+2}$$

$$\Rightarrow \frac{4x+8}{x+2} - \frac{x-2}{x+2}$$

$$= \frac{3x+10}{x+2}$$

(Total for Question 14 is 4 marks)

$$\left[\frac{(x+3)}{1} \times \frac{(x-2)}{(x^2+5x+6)} \right]$$

$$= \left[\frac{(x+3)(x-2)}{x^2+5x+6} \right]$$

$$= \frac{\cancel{(x+3)}(x-2)}{\cancel{(x+3)}(x+2)} = \left[\frac{x-2}{x+2} \right]$$

$$8 - 2 = 10$$

(b) Show that $\frac{1}{2x^2 + x - 15} \div \frac{1}{3x^2 + 9x}$ simplifies to $\frac{ax}{bx + c}$ where a , b and c are integers.

$$\frac{1}{2x^2 + x - 15} \times \frac{3x^2 + 9x}{1} = \frac{3x^2 + 9x}{2x^2 + x - 15} \quad \dots \text{factorise and cancel}$$

$$3x^2 + 9x \quad \dots \quad 3x(x + 3)$$

$$2x^2 + x - 15$$

$$(2x - 5)(x + 3)$$

$$+6x - 5x = 1x \checkmark$$

$$\begin{array}{cc} +5 & -15 \\ -5 & +3 \end{array}$$

$$= \frac{3x(x+3)}{(2x-5)(x+3)}$$

$$\frac{3x}{2x-5} \checkmark$$

(3)

(Total for Question 17 is 5 marks)

12 (a) Write $\frac{4x^2 - 9}{6x + 9} \times \frac{2x}{x^2 - 3x}$ in the form $\frac{ax + b}{cx + d}$ where a, b, c and d are integers.

A50

A52

12 (a) Write $\frac{4x^2 - 9}{6x + 9} \times \frac{2x}{x^2 - 3x}$ in the form $\frac{ax + b}{cx + d}$ where a, b, c and d are integers.

A50

A52

Factorise

$$4x^2 - 9 \dots (2x+3)(2x-3)$$

$$6x + 9 \dots 3(2x+3)$$

$$x^2 - 3x \dots x(x-3)$$

$$\frac{\cancel{(2x+3)}(2x-3)}{3\cancel{(2x+3)}} \times \frac{2x}{x(x-3)}$$

$$= \frac{2x(2x-3)}{3x(x-3)} = \frac{4x^2 - 6x}{3x^2 - 9x}$$

$$= \frac{\cancel{x}(4x-6)}{\cancel{x}(3x-9)}$$

$$\frac{4x-6}{3x-9} \checkmark$$

(3)

AQA