

Year 2 Pure Chapter 1: Algebraic Fractions - Exam Questions (Total Marks 31)

1. Express

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

as a single fraction in its simplest form.

(Total 4 marks)

2. Express

$$\frac{3x^2}{(2x^2 + 7x + 6)} \times \frac{7(3 + 2x)}{3x^5}$$

as a single fraction in its simplest form.

(Total 4 marks)

3. Express as a single fraction in its simplest form

$$\frac{x^2 - 8x + 15}{x^2 - 9} \times \frac{2x^2 + 6x}{(x - 5)^2} .$$

(Total 4 marks)

4. (a) Express as a fraction in its simplest form

$$\frac{2}{x-3} + \frac{13}{x^2 + 4x - 21}.$$

(3)

- (b) Hence solve

$$\frac{2}{x-3} + \frac{13}{x^2 + 4x - 21} = 1.$$

(3)

(Total 6 marks)

5.
$$f(x) = \frac{x^2 - x - 6}{x^2 - 3x}, \quad x \neq 0, \quad x \neq 3.$$

- (a) Express $f(x)$ in its simplest form.

(3)

- (b) Hence, or otherwise, find the exact solutions of $f(x) = x + 1$

(3)

(Total 6 marks)

6. Express

$$\frac{2x^2 + 3x}{(2x + 3)(x - 2)} - \frac{6}{x^2 - x - 2}$$

as a single fraction in its simplest form.

(Total 7 marks)