

# ALGEBRAIC FRACTIONS

To simplify algebraic fractions:

1. factorise the numerator and denominator
2. cancel any common factors

## Example 11

Simplify:

(a)  $\frac{9x+6}{3x+2}$

(b)  $\frac{15a^2 - 5ab}{10ab}$

(c)  $\frac{9x^2 - y^2}{6xy - 2y^2}$

Solution

$$\begin{aligned} \text{(a)} \quad \frac{9x+6}{3x+2} &= \frac{3\cancel{(3x+2)}}{\cancel{3x+2}} \\ &= 3 \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad \frac{15a^2 - 5ab}{10ab} &= \frac{5a\cancel{(3a-b)}}{10ab} \\ &= \frac{3a-b}{2b} \end{aligned}$$

$$\begin{aligned} \text{(c)} \quad \frac{9x^2 - y^2}{6xy - 2y^2} &= \frac{\cancel{(3x-y)}(3x+y)}{2y\cancel{(3x-y)}} \\ &= \frac{3x+y}{2y} \end{aligned}$$

## Example 12

Simplify:  $\frac{x^2 - 5x + 6}{x^2 - 9} \times \frac{x^2 + 3x}{x^2 - x - 2}$

Solution

$$\begin{aligned} \frac{x^2 - 5x + 6}{x^2 - 9} \times \frac{x^2 + 3x}{x^2 - x - 2} &= \frac{\cancel{(x-2)}\cancel{(x-3)}}{\cancel{(x-3)}\cancel{(x+3)}} \times \frac{x\cancel{(x+3)}}{(x+1)\cancel{(x-2)}} \\ &= \frac{x}{x+1} \end{aligned}$$