

11 19 PROGRESSION

endorsed for  
edexcel



Edexcel A level Mathematics

Pure Mathematics

Year 2

Pearson

## Chapter 1

### Algebraic Methods

#### 1.3 Partial Fractions 2

- E** 5 Given that, for  $x < -1$ ,  $\frac{-10x^2 - 8x + 2}{x(2x + 1)(3x - 2)} \equiv \frac{D}{x} + \frac{E}{2x + 1} + \frac{F}{3x - 2}$ , where  $D$ ,  $E$  and  $F$  are constants. Find the values of  $D$ ,  $E$  and  $F$ . **(4 marks)**

$$-10x^2 - 8x + 2 \equiv D(2x+1)(3x-2) + Ex(3x-2) + Fx(2x+1)$$

$$x=0$$

$$2 = D(1)(-2)$$

$$2 = -2D$$

$$D = -1$$

$$x = -\frac{1}{2}$$

$$-\frac{5}{2} + 4 + 2 = E\left(-\frac{1}{2}\right)\left(-\frac{3}{2} - 2\right)$$

$$\frac{7}{2} = \frac{7}{4}E$$

$$\frac{7}{2} \times \frac{4}{7} = E$$

$$2 = E$$

$$E = 2$$

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

$$-\frac{40}{9} - \frac{48}{9} + \frac{18}{9} = F\left(\frac{2}{3}\right)\left(\frac{4}{3} + 1\right)$$

$$-\frac{70}{9} = \frac{14}{9}F$$

$$-\frac{70}{9} \times \frac{9}{14} = F$$

$$-5 = F$$

$$F = -5$$