

Keri Davies

Engineering Mathematics

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Question 2)

$$i) \frac{2x+3}{6} = \frac{x}{3} + \frac{5x-1}{6} \quad 6$$

$$6\left(\frac{2x+3}{6}\right) = \frac{6x}{3} + 6\left(\frac{5x-1}{6}\right)$$

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

$$2x+3 = 2x + 5x - 1$$

$$3+1 = 2x+5x-2x$$

$$4 = 5x$$

$$\frac{4}{5} = x$$

$$ii) 2\ln(x+6) = \ln(x+3) + \ln(x+7)$$

$$\log(x+6)^2 = \log(x+3)(x+7)$$

$$(x+6)(x+6) = (x+3)(x+7)$$

$$x^2 + 6x + 6x + 36 = x^2 + 7x + 3x + 21$$

$$12x + 36 = 10x + 21$$

$$12x - 10x = 21 - 36$$

$$2x = -15$$

$$x = \frac{-15}{2}$$