

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

ACMA4006

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

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

$$x^2 + 12x + 36 = x^2 + 10x + 21$$

$$2x = -15$$

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

$$x = -7.5$$

a iii) $3^{x+5} = 2^x \times 6$

$$(x+5)\log 3 = x\log 2 + \log 6$$

$$0.48x + 2.39 = 0.30x + 0.78$$

$$0.18x = -1.61$$

$$x = \frac{-1.61}{0.18}$$

$$x = -8.94$$