

4015

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2001090

AEHA4006

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Further maths

6)

i) $\int x^4 + 3x^2 - 3x + 1 \, dx$

$$\int \frac{4x^5}{5} + \frac{3x^3}{3} - \frac{3x^2}{2} + x + C$$

ii) $\int (x-1)(x-3) \, dx$

$$x^2 - 3x - x - 3x$$

$$x^2 - 6x - x$$

$$\int x^2 - 7x$$

$$\int \frac{x^3}{3} - 7x + C$$

iii) $\int 3 \sec^2 2x \, dx$

$$3 \int \frac{1}{2} \tan 2x + C$$

iv) $\int_0^4 (x+3)(x+2) \, dx$

$$x^2 + 2x + 3x + 6$$

$$\int_0^4 x^2 + 5x + 6$$

$$\left[\frac{1}{3}x^3 + (5 \times 4) + 6x \right] - \left[\frac{1}{3}0^3 + (5 \times 0) + 6 \right]$$

$$\left[\frac{1}{3}(64) + 20 + 24 \right] - \left[\frac{1}{3}(0) + 0 + 6 \right]$$

$$\left[\frac{64}{3} + 20 + 24 \right] - \left[\frac{0}{3} + 0 + 6 \right]$$

$$\left[\frac{64}{3} + 44 \right] - \left[6 \right]$$

$$= 36$$