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[P6.2]
ACHA 4000

Question Three

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

$$= \int_0^2 \left(\frac{9x^6 - 4x^2}{3x^3 - 2x} \right)^3 + 4x + 3 \, dx$$

$$= \int_0^{\sqrt{\frac{2}{3}}} \left(\frac{9x^6 - 4x^2}{3x^3 - 2x} \right)^3 + 4x + 3 \, dx = \sqrt{6} + \frac{256}{45}$$

$$= \sqrt{6} + \frac{256}{45} - \sqrt{6} + \frac{44254}{9}$$

$$= \frac{24614}{5} = 4922.8$$

iv) $\int_2^4 (2x+3)(x+5) \, dx$

$$= \int_2^4 (2x^2 + 13x + 15) \, dx$$