

$$3. \int \frac{6(2x^3 + 5x^5) dx}{(3x^4 + 5x^6)^{u(x)}} \quad \text{check if fits the Log Rule}$$

$$u(x) = 3x^4 + 5x^6$$

$$u'(x) = 12x^3 + 30x^5 = 6(2x^3 + 5x^5) \quad \checkmark$$

$$I_3 = \ln |3x^4 + 5x^6| + C$$

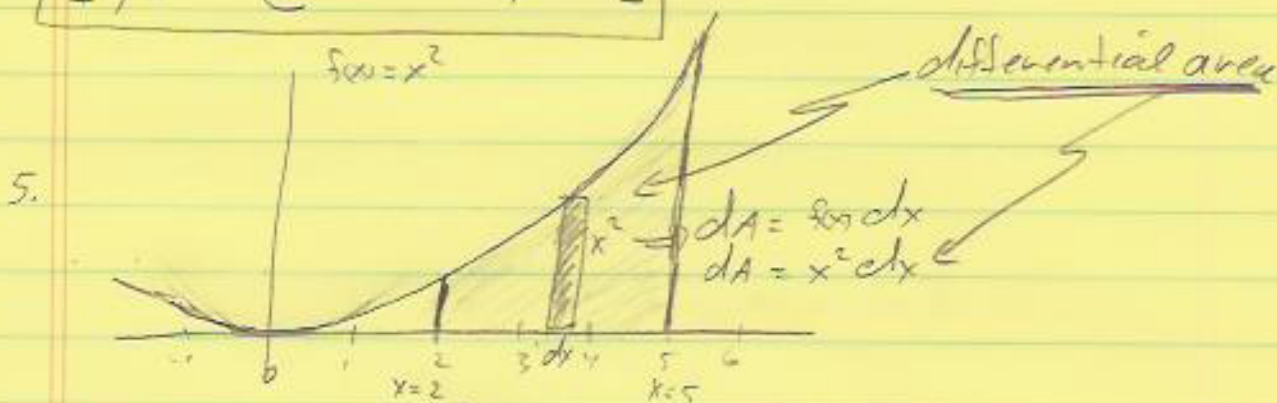
$$I_3 = \ln(3x^4 + 5x^6) + C$$

$$4. \int 6x^3(2 + 5x^2) e^{(3x^4 + 5x^6)^{u(x)}} dx \quad \text{check if fits exponential Rule?}$$

$$u(x) = 3x^4 + 5x^6$$

$$u'(x) = 12x^3 + 30x^5 = 6x^3(2 + 5x^2) \Rightarrow \text{perfect fit.}$$

$$I_4 = e^{3x^4 + 5x^6} + C$$



$$A = \int_{x=2}^5 dA = \int_{x=2}^5 x^2 \cdot dx = \left. \frac{x^3}{3} \right|_{x=2}^5 = \frac{5^3}{3} - \frac{2^3}{3} = \frac{125-8}{3}$$

$$= \frac{117}{3} = 39.0000$$

(2) to four decimal places.