

Oginni Oluwaseyi · M

19/ENG06/04

Mech. Engineering

$$4) \int x(2x^2+1)^{1/2}$$

$$\text{Let } u = 2x^2 + 1$$

$$\frac{du}{dx} = 4x$$

$$dx = \frac{du}{4x}$$

$$= \int x u^{1/2} \frac{du}{4x}$$

$$= \int \frac{x u^{1/2} du}{4x}$$

$$= \frac{1}{4} \int u^{1/2} du$$

$$= \frac{1}{4} \left[\frac{u^{3/2}}{3/2} \right] + C$$

$$= \frac{1}{4} \left[\frac{(2x^2+1)^{3/2}}{3/2} \right] + C$$

$$= \frac{1}{4} \left[\frac{(2x^2+1)^{3/2} \times \frac{2}{3}}{1} \right] + C$$

$$= \frac{1}{6} \left[(2x^2+1)^{3/2} \right] + C$$

$$= \frac{1}{6} (2x^2+1)^{3/2}$$

$$= \left[\frac{1}{6} (2(2)^2+1)^{3/2} \right] - \left[\frac{1}{6} (2(0)^2+1)^{3/2} \right]$$

$$= \frac{9}{2} - \frac{1}{6}$$

$$= \frac{13}{3}$$

Diginni Duwaseyi. M

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