

$$d) \int 5 \sin(x) \cos(x) dx$$

$$= 5 \int \sin(x) \cos(x) dx$$

$$= 5 \frac{u^{1+1}}{1+1}$$

$$= 5 \frac{\sin^{1+1}(x)}{1+1} = \frac{5}{2} \sin^2(x)$$

$$= \frac{5}{2} \sin^2(x) + C$$

$$e) \int 3x^2 \sqrt{x^3} dx \quad u = x^3$$

$$= 3 \int \sqrt{u} du$$

$$= 3^{1/3} \frac{u^{3/2+1}}{3/2+1} = \frac{3^{1/3} (x^3)^{5/2}}{5/2} = \frac{2}{5} 3^{1/3} x^{15/2}$$

$$= \frac{2}{5} \times \frac{4}{2}$$

$$d = \frac{2}{5} \times \frac{9}{2} + C$$