

INTEGRATION (Q 8, PAPER 1)

1999

8 (a) Find $\int \left(4x + 1 + \frac{1}{x^3} \right) dx$.

(b) Evaluate (i) $\int_0^{\frac{\pi}{6}} 2 \cos 4\theta \cos 2\theta d\theta$ (ii) $\int_{-3}^0 (x+3)e^{x(x+6)} dx$.

(c) Evaluate $\int_0^{\sqrt{3}} \sqrt{4-x^2} dx$.

Hint: Let $x = 2 \sin \theta$.

ANSWERS

8 (a) $2x^2 + x - \frac{1}{2x^2} + c$

8 (b) (i) $\frac{\sqrt{3}}{4}$ (ii) $\frac{1}{2} \left[1 - \frac{1}{e^9} \right]$

8 (c) $\frac{2\pi}{3} + \frac{\sqrt{3}}{2}$