

**INTEGRATION (Q 8, PAPER 1)**

**2009**

8 (a) Find  $\int \left( 6x + 3 + \frac{1}{x^2} \right) dx$ .

(b) Evaluate (i)  $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \sin 3x \sin x \, dx$  (ii)  $\int_{\ln 3}^{\ln 8} e^x \sqrt{1 + e^x} \, dx$ .

(c) Use integration methods to establish the standard formula for the volume of a cone.

**ANSWERS**

8 (a)  $3x^2 + 3x - \frac{1}{x} + c$

(b) (i)  $\frac{1}{2}$  (ii)  $\frac{38}{3}$