

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

**2011**

8. (a) Find  $\int (x^3 + \sqrt{x}) dx$ .

(b) (i) Evaluate  $\int_0^2 \frac{x+1}{x^2+2x+2} dx$ .

(ii) Evaluate  $\int_0^2 \frac{x^2+2x+2}{x+1} dx$ .

(c) Use integration methods to establish the formula  $A = \pi r^2$  for the area of a disc of radius  $r$ .

**ANSWERS**

8 (a)  $\frac{1}{4}x^4 + \frac{2}{3}x^{\frac{3}{2}} + c$

(b) (i)  $\frac{1}{2} \ln 5$                       (ii)  $4 + \ln 3$