











**Notes:****(a)**

**B1:** States or uses the strip width  $h = 0.5$ . This can be implied by the sight of  $\frac{0.5}{2}\{\dots\}$  in the trapezium rule

**M1:** For the correct form of the bracket in the trapezium rule. Must be  $y$  values rather than  $x$  values  $\{\text{first } y \text{ value} + \text{last } y \text{ value} + 2 \times (\text{sum of other } y \text{ values})\}$

**A1:** 4.393

**(b)**

**B1:** See scheme

**(c)**

**M1:** Uses integration by parts the right way around.

$$\text{Look for } \int x^2 \ln x \, dx = Ax^3 \ln x - \int Bx^2 \, dx$$

**A1:**  $\frac{x^3}{3} \ln x - \int \frac{x^2}{3} \, dx$

**B1:** Integrates the  $-2x+5$  term correctly  $= -x^2 + 5x$

**M1:** All integration completed and limits used

**M1:** Simplifies using ln law(s) to a form  $\frac{a}{b} + \ln c$

**A1:** Correct answer only  $\frac{28}{27} + \ln 27$