

$$A = \int_{-1}^5 e^{3x} dx = \left[\frac{e^{3x}}{3} \right]_{-1}^5$$

$$\frac{e^{3 \times 5}}{3} - \frac{e^{3 \times -1}}{3}$$

$$= \frac{e^{15} - e^{-3}}{3}$$

$$B = \int_{-2}^3 2(2x+3)(x^2+3x) dx$$

$$= 2 \int_{-2}^3 (2x+3)(x^2+3x) dx$$

$$= 2 \int_{-2}^3 (2x^3 + 9x^2 + 6x) dx$$

$$= 2 \left[2 \times \frac{x^4}{4} + 9 \times \frac{x^3}{3} + 6 \times \frac{x^2}{2} \right]$$

$$= 2 \left(2 \times \frac{3^4}{4} + 9 \times \frac{3^3}{3} + 6 \times \frac{3^2}{2} - \left(2 \times \frac{(-2)^4}{4} + 9 \times \frac{(-2)^3}{3} + 6 \times \frac{(-2)^2}{2} \right) \right)$$

$$= 305$$

$$C = \int_1^e \frac{2x}{x^2} dx = \left[\ln(x^2) \right]_1^e$$

$$= \ln(e^2) - \ln(1)$$

$$= \ln(e^2) = 2$$