



Question 9

$$\begin{aligned} \text{a) ii) } \int_2^4 \ln(x-1) dx & \\ &= (x-1)^4 \\ &= 4-2 \\ &= 2. \end{aligned}$$

$$\text{b) } A = P \left(1 + \frac{r}{100} \right)^n$$

$$A = 5000 \left(1 + \frac{0.0875}{100} \right)^{23}$$

$$= 5000 (1.000875)^{23}$$

$$5000 \times 1.000875^{23} + 5000 \times 1.000875^{22} + 5000 \times 1.000875^{21} + \dots + 5000 \times 1.000875$$

$$a = 5000 \times 1.000875 \quad n = 23 \quad r = 1.000875$$

$$\cancel{P} S_n = 5000 \times 1.000875 (23-1) \times 1.000875$$

$$= 5004 \times 22 \times 1.000875$$

$$= 110192.6 \text{ dollars}$$