Question1. Find the following indefinite and definite integrals.

a) $\int \left(e^2 + 3^{-1} + x^e - \dfrac{2}{\sqrt{x}} + e^x + \dfrac{1}{x} \right) dx$

b) $\int \left(\dfrac{3x^4 - 5x}{2x^2} + 3x^2 \right) dx$

c) $\int_{2}^{4} (4x - 5) dx$

Question2. Find the area of the region bounded by $y = -x^2 + 4x$ and x-axis.

Question3. Assume that the demand and supply functions of a product are as follows,

$$q_d = p^2 - 60p + 900, \quad q_s = 40p$$

a) Find the equilibrium point (p_e, q_e).

b) Determine the consumer's and producer's surplus when the market is in equilibrium.