



max. profit at $x=170$

ب) مع سعر الوحدة 150
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∴ max. profit at $x=150$

→ max. profit = $P(150)$

$$= 34(150) - 100 - \frac{150^2}{10}$$

$$= 2750$$

37 The weekly demand function for x units of a product sold by only one firm is $p = 600 - \frac{1}{2}x$ and the average cost of production is $\bar{C} = 300 + 2x$.

a) Find the quantity that will maximize profit?

$$P(x) = R(x) - C(x) ; R(x) = px$$

$$= 600x - \frac{1}{2}x^2$$

$$C(x) = \bar{C}x$$

$$= 300x + 2x^2 ;$$

$$P(x) = 600x - \frac{1}{2}x^2 - 300x - 2x^2$$

$$= 300x - 2.5x^2$$

$$\rightarrow P'(x) = 300 - 5x = 0 \rightarrow \begin{matrix} 300 - 5x = 0 \\ -300 & -300 \\ -5x & = -200 \end{matrix} \rightarrow x = 60$$