

18] If the total cost function for a product is $C(x) = 250 + 6x + 0.1x^2$ producing how many units will minimize the average cost, Find the minimum average cost?

$$\text{average cost } \bar{C} = \frac{C(x)}{x} = \frac{250}{x} + 6 + 0.1x$$

$$= 250x^{-1} + 6 + 0.1x$$

$$\rightarrow \bar{C}' = -250x^{-2} + 0.1$$

$$= -\frac{250}{x^2} + 0.1 = 0$$

$$\rightarrow -\frac{250}{x^2} + 0.1 = 0 \rightarrow -\frac{250}{x^2} = -0.1$$

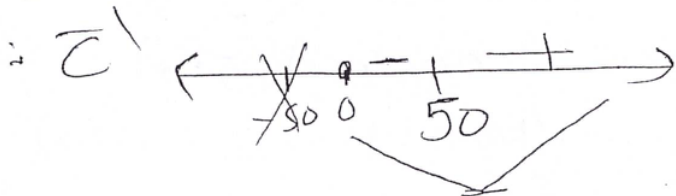
$$\frac{-250}{-0.1} = \frac{-0.1}{-0.1} x^2$$

$$\Rightarrow x^2 = 2500$$

$\rightarrow \bar{C}'$ is undefined at $x=0$

$$\rightarrow x = 50, \text{ } \cancel{x=50}$$

سؤال في الامتحان
الاجابة هي 50



\Rightarrow min. average cost at $x=50$ (# of units)

$$\rightarrow \text{min average cost} = \bar{C}(50)$$

$$= \frac{250}{50} + 6 + 0.1(50)$$

$$= \underline{\underline{16}}$$