

$$\rightarrow P(x) = \underline{120x} - \underline{0.015x^2} - 10000 - \underline{60x} + \underline{0.03x^2} - 0.0001x^3$$

$$= 60x + 0.015x^2 - 10000 - 0.0001x^3$$

$$P'(x) = 60 - 0.03x - 0.0003x^2$$

$$a = -0.0003, b = -0.03, c = 60$$

$$\rightarrow X = \frac{0.03 \pm \sqrt{(-0.03)^2 - 4(-0.0003)(60)}}{2(-0.0003)}$$

~~$$X = \frac{0.03 \pm \sqrt{0.0009 - 0.00072}}{-0.0006}$$

$$= \frac{0.03 \pm \sqrt{0.00018}}{-0.0006}$$

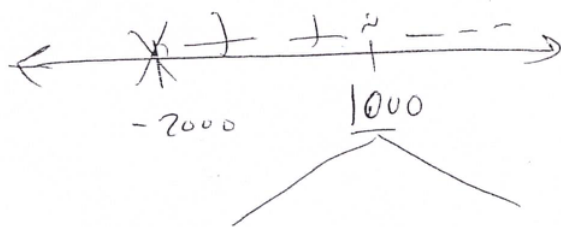
$$= \frac{0.03 \pm 0.0134}{-0.0006}$$

$$= \frac{0.0434}{-0.0006} \text{ or } \frac{0.0166}{-0.0006}$$

$$= -7233.33 \text{ or } -2766.67$$~~

$$X = \frac{0.03 \pm 0.09}{-0.00006} = \begin{cases} -2000 \\ 1000 \end{cases}$$

لا يوجد عدد صحيح
بالسالب لذا نرفضها



∴ max. profit at $x = 1000$
(# of units)

$$\begin{aligned} \therefore p + sc = p &= 120 - 0.015x \\ &= 120 - 0.015(1000) \\ &= 105 \end{aligned}$$

$$\begin{aligned} \therefore \text{max. profit} &= P(1000) \\ &= 60(1000) - 0.015(1000)^2 \\ &\quad - 10000 - 0.0001(1000)^3 \\ &= \boxed{25000} \end{aligned}$$