

- Sec 9.9 : Applications: -

4) Suppose the total revenue function for a commodity is

$$R(x) = 25x - 0.05x^2$$

(a) Find $R(50)$ and tell what it represents.

$$\begin{aligned} R(50) &= 25(50) - 0.05(25)^2 \\ &= 1250 - 31.25 \\ &= 1218.75 \end{aligned}$$

the revenue from selling ~~to~~ 50 units

(b) Find the marginal revenue.

$$\begin{aligned} \overline{MR} &= R'(x) = 25 - 0.05(2)x \\ &= 25 - 0.1x \end{aligned}$$

(c) Find the marginal revenue at $x=50$, and tell what it predicts about the sale of the next unit and the next \geq units.

$$\begin{aligned} \overline{MR}(50) &= R'(50) = 25 - 0.1(50) \\ &= 25 - 5 \\ &= \boxed{20} \$ \end{aligned}$$

the ~~revenue~~ revenue will increase by about 20\$ if a 51st unit is sold, and by about $20 \times 2 = 40\$$ if \geq additional units are sold after 50.

(d) $R(51) - R(50)$ and explain what this value represents

$$R(51) = 25(51) - 0.05(51)^2 = 1144.95$$

$$R(50) = 1218.75 \quad \therefore R(51) - R(50) = 1144.95 - 1218.75$$

9. ~~20~~ 20 the ~~exact~~ exact revenue from selling the 51st unit is -73.8