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## 9.9: Applications of the Derivative

Ex1: If the cost in dollars to produce  $x$  items is given by  $C(x) = 50 + 48x + x^3$ , find the marginal cost for  $\overline{MC}$ .

Ex2: Suppose that the cost for a commodity is  $C(x) = 300 + 6x + \frac{1}{20}x^2$

- Find and interpret  $\overline{MC}(8)$
- Compare to  $C(9) - C(8)$ .

Ex3: Suppose that the total revenue for a commodity is  $R(x) = 36x - 0.01x^2$ .

- Find  $\bar{r}$ -intercept  $R(100)$ .
- Find  $\overline{MR}(x)$
- Interpret  $\overline{MR}(100)$
- Compare to  $R(101) - R(100)$ .

Ex4: If the profit from the sale of  $x$  items is given by  $P(x) = 16x - 0.1x^2 - 100$ , ...

- Graph  $\overline{MP}(x)$
- What level of production & sales will give a 0 marginal profit?
- At what level of prod. is profit maximized?

Ex5: If the daily dollars of cost/unit of producing a ~~price~~ product by CAT Corp is  $10 + 2x$  & if the price on the competitive market is \$50, what is the max daily profit that can be expected?