

Assignment #22

- ① Find the cost function, $C(x)$ for the following marginal cost function, $C'(x) = 7x - \frac{3}{x}$ if 10 units cost \$88.50. Leave answer in terms of the ln.

ans: $C(x) = \left(\frac{7}{2}\right)x^2 - 3\ln x + 3\ln 10 - 261.5$

- ② Find the demand function, $p = \$ (x)$, for the following marginal revenue function, $R'(x) = 300 - .18\sqrt{x}$, if no items are sold, the revenue is \$0.

ans: $p = \frac{R(x)}{x} = 300 - .12x^{\frac{1}{2}}$

- ③ The marginal profit in dollars for Dark Chocolate sold at a retailer is given by

$$P'(x) = 3x(25x^2) + 44x, \quad x \text{ is the amount of chocolate sold in 100 pounds. There is a loss of } \$20 \text{ when no chocolate is sold.}$$

a) Find the profit function

b) Find the profit from selling 300 lbs.

ans: a) $P(x) = \left(\frac{75}{4}\right)x^4 + 22x^2 - 20$

b) $P(3) = \$1,696.75$