

Math 1314 – ONLINE
Alternate Assignment 7

Record your answers to these questions on the Alternate Assignment 7 answer sheet and upload your answers to the Alternate 7 slot on the “Assignments” tab at casa.uh.edu. This assignment is due on Sunday, March 3, 2013, at 11:59 p.m. All work must be submitted electronically. Late work will not be accepted.

1. A company has determined that the fixed costs to produce one of its products are \$125,000 per month, and the product has unit costs of \$8.25. The company sells its product for \$75.00. What is the break even quantity?
2. When a product costs \$300, demand for the product is 5000 units per month. When the price is reduced to \$275, the demand rises to 7200 units per month. The manufacturer will not sell the product if for a price that is less than or equal to \$150. For each \$25 above \$150, the manufacturer will make an additional 1500 units available in the market place. Assuming both supply and demand equations are linear, at what quantity does the product reach market equilibrium?
3. A company finds that employee productivity can be modeled using the function
$$P(t) = \frac{311.48}{2.1 + 2t^{\frac{-1}{3}}}$$
 where t represents the number of months the employee has been on the job and P represents the number of items the employee can produce during an 8 hour workday. How many items should management expect an employee to produce during an 8 hour workday after two years on the job?
4. Enrollment at a community college can be modeled using the function
$$N(t) = \frac{-25000}{\sqrt{1 + 0.5t}} + 30000$$
, where t represents time in years. At what rate would they expect the enrollment to be growing in 5 years (answer is given in students per year)?
5. Demand for a product can be modeled by the function $p = -0.0075x + 1200$. Cost can be modeled by the function $C(x) = -0.0003x^2 + 0.85x + 150000$. Find the profit realized when 130 items are sold.
6. Find $E(p)$ if $p = 500 - 0.04x$ and the price is 400.
7. Using your answer for problem 6, is demand elastic, inelastic or unitary?
8. Using your work for problems 6 – 7, what does this tell you about revenue?
9. If $E(300) = 0.75$, is demand elastic, inelastic or unitary?
10. Using your answer for problem 9, what does this tell you about revenue?

11. Suppose $P(t) = 1.65(0.895)^t$. Is the function increasing or decreasing?
12. Suppose $P(t) = 2.9(1.085)^t$. Find $P(4)$ and $P'(4)$.
13. Find an exponential regression function that passes through $(0, 3500)$ and $(2, 3850)$.
14. Using the function you found in problem 13, find $f(6)$.
15. Suppose $Q(t) = 27.85e^{-0.178t}$. Is the function increasing or decreasing?
16. Suppose $Q(t) = 27.85e^{-0.178t}$. What is the initial value?
17. The answer is True.
18. The answer is False.
19. The answer is False.
20. The answer is True.