

CHAPTER 3.7-3.9 REVIEW
SHOW ALL WORK!!!

NAME _____

Multiple Choice

1. The product of two positive numbers is 588. Minimize the sum of the first and three times the second.
 - (a) Both numbers are $14\sqrt{3}$.
 - (b) 42 and 14
 - (c) 28 and 21
 - (d) None of these

2. An open box is to be made from a 3-foot by 5-foot rectangular piece of material by cutting equal squares from each corner and turning up the sides. Find the volume of the largest box that can be made in this manner.
 - (a) 5.2 ft^3
 - (b) 4.1 ft^3
 - (c) 7.5 ft^3
 - (d) 3.3 ft^3
 - (e) None of these

3. A farmer has 160 feet of fencing to enclose 2 adjacent rectangular pig pens. What dimensions should be used for each pig pen so that the enclosed area will be a maximum?
 - (a) $4\sqrt{15} \text{ ft}$ by $\frac{8}{5}\sqrt{15} \text{ ft}$
 - (b) 40 ft by $\frac{80}{3} \text{ ft}$
 - (c) 20 ft by $\frac{80}{3} \text{ ft}$
 - (d) 40 ft by 40 ft
 - (e) None of these

4. Find two positive integers whose sum is a minimum if the product of the two numbers is 36.
- (a) 3 and 12
 - (b) 4 and 9
 - (c) 2 and 18
 - (d) 6 and 6
 - (e) None of these

Open-Ended Questions

9. A rancher has 300 feet of fencing to enclose a pasture bordered on one side by a river. The river side of the pasture needs no fence. Find the dimensions of the pasture that will produce a pasture with a maximum area.

10. A right circular cylinder is to be designed to hold 22 cubic inches of a soft drink. The cost for the material for the top and bottom of the can is twice the cost for the material of the sides. Let r represent the radius and h the height of the cylinder.
- a. Write the equation for the surface area, SA , in r and h .
 - b. Write the cost function, C .
 - c. Write the cost function as a function of one variable, r .
 - d. Find the radius that minimizes cost.
11. Find the point on the graph of $y = x^3$ closest to the point $(1, 0)$. Find the x value accurate to the nearest 0.1.