Name: _____ Date: _____

ACTIVITY 3: Reviving Revenue! Answer Key

The same analyst determined that a company's demand, where p denotes the unit price and x denotes the quantity demanded, is given by the demand function $p = -0.02x + 300$.

1. Find the total revenue function R(x) by substituting p into $R(x) = p \cdot x$.

   $R(x) = p \cdot x = -0.02x + 300 = -0.02x^2 + 300x$

2. Find the marginal revenue function.

   $R'(x) = -0.04x + 300$

3. Evaluate the marginal revenue for the 4001st and 8001st item produced.

   $R'(4001) = 140$ $R'(8001) = -20$

4. Compare your marginal cost and marginal revenue for the 4001st item produced. Interpret your result.

   $R'(4001) = 140$ $C'(4001) = 24$
   The 4001st item would bring in \$140 while costing only \$24 to produce. The company would be making an additional profit of \$140- \$24 = \$116 by producing and selling the 4001 unit of output instead of stopping at 4000. Note that this is not the total profit earned from selling 4001 units.

5. Compare your marginal cost and marginal revenue for the 8001st item produced. Interpret your result.

   $R'(8001) = -20$ $C'(8001) = 136$
   The 8001st item would bring in -\$20 while costing \$136 to produce. The company would be losing of -\$20- \$134 = \$154 by producing and selling the 8001st item instead of stopping at 8000.

6. How can we use our findings to guide this company's production?

   The finding tells us that while certain quantities of production would yield a profit, producing too little or too much would yield a loss. This means that there has to be a specific quantity at which the company should end production.