Name: _____ **Math 1030 Quiz #4** (July 26th, 2016)

You may **skip ONE** of the following problems.

1. Bob's Plastic Pink Flamingo Shack sells 5,000 flamingos each year. Bob can purchase a pink flamingo for \$2. His supplier has a \$50 shipping fee. Also, Bob has figured out that it costs him \$0.75 to store a flamingo for a year (base inventory costs on average inventory with all of the standard assumptions). Let $C(x)$ be Bob's annual cost function for his flamingos.

   $C(x) =$ _____

   List **ALL** of the critical points of $C(x)$ including "irrelevant" critical points (points outside the domain of reasonable x values). Round each to 3 decimal places.

   Critical points: $x =$ _____

   Bob's **ideal** EOQ is $x =$ _____ and minimum annual cost is $C(x) =$ \$_____.

2. Let $f(x) = \begin{cases} x^3 + 3x^2 + x & x < -1 \\ -x^2 + x + 3 & x \geq -1 \end{cases}$ Sketch the graph of $y = f(x)$ where $-2 \leq x \leq 2$.

   $f(x)$ has _____ critical points. They are located at $x =$ _____.
   [List **all** critical points. Round to 3 decimal places.]

   Example of a piecewise function In Alpha: The absolute value function can be defined piecewise as

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   piecewise[{{x, x >= 0}, {-x, x < 0}}]
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3. Wendy typically sells 50 frosties when she charges \$1.50 per frostie. On the other hand, if Wendy charges \$2, she typically sells only 12 frosties.

   Given this data, Elasticity E = _____.

   If Wendy's point elasticity is "$\varepsilon = 2.25$" and she lowers her price 5%, what should Wendy expect to happen to her revenue? [Circle the correct answer.]

   Revenue Increases / Revenue Decreases

   Wendy should see her quantity sold Increase / Decrease by _____ %.