Math 1030 Workshop #6 **Name:** _____

DUE: Wednesday, July 31st Please turn in a paper copy and **SHOW YOUR WORK!**

1. Jessica is selling low end student violins at her music store. Over time she collected the following demand data:

Violins Sold	5	20	150	180
Price	\$200	\$175	\$100	\$80

(a) Compute elasticity (round to 3 decimals places):

Violins Sold	5	20	150	180
Price	\$200	\$175	\$100	\$80
Elasticity				× × × ×

(b) Model this demand price (in Excel) using an **exponential** trendline.

$p_d(q) =$ _____

According to this model, we will sell _____ violins if we set our price at \$120.

When $p_d(q) = \$120$, our point elasticity is $\varepsilon =$ _____ (round to 3 decimal places).

Circle the correct answer: We are currently charging \$120 for a student violin and want to **increase** revenue, we should raise / lower our price.

What quantity and price will **maximize** revenue? $q =$ _____ $p =$ _____

2. Warren is building a odd shaped patio shaped like the portion of the xy-plane which is bounded by the x-axis and $y = 7|x| - 3x^2 + 2$. He needs to determine the area of this region so he knows how much concrete he needs to purchase.

Find the x-coordinates of the points where $y = 7|x| - 3x^2 + 2$ crosses the x-axis.
[Round to 4 decimal places.]

$x =$ _____ and $x =$ _____

Determine the area of this region 3 different ways: (1) Using a right hand rule approximation with $n = 10$ rectangles. (2) Using Simpson's rule with $n = 4$ and (3) Compute the area exactly using Alpha. [Round each answer to 4 decimal places.]

Right hand rule: _____ Simpson's rule: _____ Exact area: _____

3. Suppose that $R(t) = 5\ln(t+1) - t + 10$ models the rate of consumption of pancakes at Fun Time Summer Camp. t is the number of minutes from the time that breakfast is served and $R(t)$ is measured in pancakes per minute.

   When will the campers stop eating pancakes? $t =$ _____
   [Round to 3 decimal places.]

   The total number of pancakes eaten is _____.
   [Round to 3 decimal places.]

   How long does it take the first 100 pancakes to get eaten? _____ minutes.
   [Round to 3 decimal places.]

   Alpha Commands used / integrals computed:

4. After surveying the student body, we have found that the average weight of a Western Hoople University (WHU) dorm student is 145 lbs. In addition we have found that these weights have a standard deviation of 15. Assume these weights are normally distributed.

   What percentage of the student body weighs between 110 and 130 lbs? _____.
   [Answer in the form: XXX.XXX%]

   If WHU has 1,500 dorm students, how many students weight less than 100 pounds? _____

   How much would you have to weigh to be in the heaviest 2% of the student body? _____
   [Round to 3 decimal places.]

   Alpha Commands used / integrals computed: