Mat150 - Chapter 2 Review Name_____
DO ALL WORK ALGEBRAICALLY
USE YOUR CALCULATOR UNLESS STATED **Class Hour:_____**
TO CHECK YOUR ANSWERS ONLY

==========

Section 2.2

1. The following data represents the Olympic winning time in Women's 100 m Freestyle. Where x is the number of years after 1970 and y in time in seconds.

year	1972	1976	1980	1984	1988	1992	1996
time	58.59	55.65	54.79	55.92	54.93	54.65	54.50

a) Use the chart below to align the data:

Year # years after 1970							
Time							

b) Input Variable:_____ Input Units:_____

Description of Input variable:_____

Output Variable:_____ Output units:_____

Description of Output variable:_____

c) Use your calculator to find a **linear** function that "Best Fits" the data above. Round your answer to 2 decimal places.

_____

d) What is the correlation coefficient (to 5 decimal places? _____

Is the line your found a good fit? Why or Why not?

e) What is the slope of the line: _____

Interpret the slope of the line:

e) Using the line of best fit for the data set, predict the Olympic winning time in 2000.

_____

Section 2.3

2. **Find using algebra the points of intersection of the graphs of the two functions.**

$f(x) = x^2 - 12x + 27$ and $g(x) = 2x^2 - 12x + 18$ x-values:

_____

Coordinate points

_____

3.

Using substitution find the real zeros of the function.

$P(x) = (2x - 6)^2 - 4(2x - 6) + 3$ State the Substitution made:

Section 2.4

4. Given: $f(x) = -2(x-1)^2 + 3$ a) List the transformation: Basic Function:_____

1:

2:

3:

4:

5. Given: $f(x) = -x^2 + 4x$

a) Find the Vertex. a)_____

b) Find the domain and range of f(x) b) Domain:_____

Range_____

c) Find the Axis of Symmetry. c)_____

d) How does f(x) open? d)_____

e) Does it have a minimum or maximum? e)_____

What is that maximum or minimum value? _____

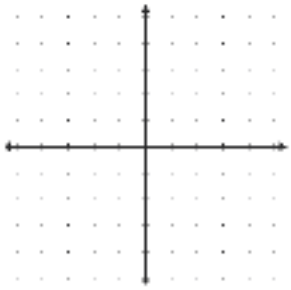
f) Find the x-intercept(s). f)_____

g) Find the y-intercept. g)_____

h) Where is f(x) increasing? h)_____

i) Where is f(x) decreasing? i)_____

j) Graph f(x) (Scale your graph paper if you need to.)



6. The owner of a video store has determined that the profits P of the store are approximately given by $P(x) = -x^2 + 80x + 66$, where x is the number of videos rented daily. Find the maximum profit to the nearest dollar.

Maximum Profit:

_____

Section 2.7

7. Find the complex zeros of the following quadratic function: $g(x) = x^2 + 6x + 13$

_____

8. Determine the character of the solutions of a quadratic equation using the **discriminate**.

$3x^2 - 8x + 7 = 0$

Work:

Circle your answer

a) 2 real solutions

b) 1 real solution

c) 2 imaginary solutions

Section 2.6

9. **Use a graphing calculator to find the quadratic function of best fit.**

Southern Granite and Marble sells granite and marble by the square yard. One of its granite patterns is price sensitive. If the price is too low, customers perceive that it has less quality. If the price is too high, customers perceive that it is overpriced. The company conducted a pricing test with potential customers. The following data was collected.

Price, x	Buyers, B
$20	30
$30	50
$40	65
$60	75
$80	72
$100	50
$110	25

a. Use your calculator to find a **quadratic** function that best fits the data.

_____

b. What is the correlation coefficient (state to 5 decimal places) and how good is the fit. _____

c. At what price will the number of buyers be a maximum? _____

d. What is the maximum number of buyers? _____

e. How many buyers would you have when the price is $90? _____

f. What would the price(s) have to be to have 55 buyers? _____