DO NOT TURN THIS PAGE UNTIL YOU ARE INSTRUCTED TO DO SO

- ❖ Write your name below on the space provided.
- ❖ This test has a total of 4 pages.
- ❖ Work the problem in the space provided. If you need more space, write on the back of the test.
- ❖ To insure maximum credit, show your work. In general, full credit will not be given for unsupported answers.
- ❖ Draw a sun on this page for some credit.
- ❖ Look only at your test. Don't give me the impression that you are cheating.
- ❖ Be sure to write neatly. If I cannot read what was written, do not expect the problem to be graded.
- ❖ If you finish early, go over the test again.

Good luck!

Number	Maximum	Score
1	2	
2	10	
3	6	
4	10	
5	10	
6	6	
7	10	
8	2	
9	2	
10	18	
11	9	
12	10	
13	5	
Total	100	

Name _____

Circle Final Answers

1) (2 points) What are the four ways to solve a quadratic equation?

2) (5 points each) Solve for the variable:

a) $x^2 - 25 = 0$

b) $4(x-2)^2 + 6 = 10$

3) (3 points each) Fill the blank with the number necessary to complete the square and then factor. Show all necessary work:

a) $x^2 + 8x +$ _____

b) $x^2 - 17x +$ _____

4) (5 points each) Solve by completing the square:

a) $x^2 + 6x + 4 = 0$

b) $3x^2 + 15x + 60 = 0$

5) (5 points each) Solve by using the quadratic formula:

a) $x^2 + 6x + 4 = 0$

b) $3x^2 + 15x + 60 = 0$

6) (6 points) A 5x7 photo will have a matte that has a uniform width. If the entire area of the photo with the matte is to be 55.25 square inches, how wide should the matte be?

7) (5 points each) Solve for the variable:

a) $x^4 - 9x^2 + 8 = 0$

b) $2x - 7\sqrt{x} + 3 = 0$

8) (3 points) Where is the vertex of the quadratic function $f(x) = \dfrac{3}{5}(x-4)^2 - 1$ located?

9) (3 points) Explain the transformations necessary to sketch the graph of $f(x) = -2(x+3)^2 + 4$:

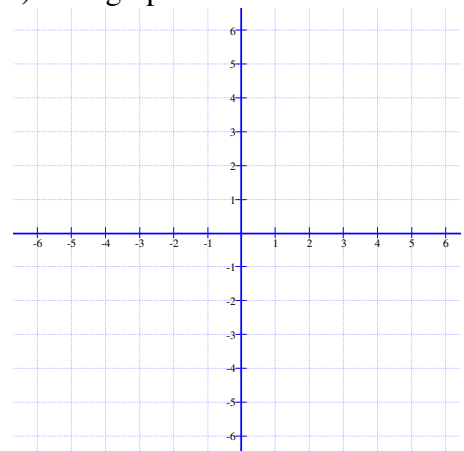10) (3 points each) For the function $f(x) = x^2 + 2x - 3$, find…

a) The vertex:

b) The x-intercepts:

f) The graph:

c) The y-intercept:

d) The domain:

e) The range:

11) (3 points each) A large cupcake thrown into the air off of a 48-foot cliff follows a path given by the function $h(t) = -16t^2 + 32t + 48$ where h is the height in feet and t is time in seconds:

a) Find the time at which the cupcake will the highest off the ground:

b) Find the highest height the cupcake will be in the air.

c) Find the time when the cupcake will hit the ground:

University research has shown that children actually hate small cupcakes.

12) (5 points each) Solve for the variable and write your answer in interval notation:

a) $10x^2 - 13x - 3 \geq 0$

b) $\dfrac{x^2 + 6x + 5}{2x - 6} \geq 0$

13) (5 points) Graph the inequality $y \leq -x^2 + 4$: