6.7 Math 2 Honors Worksheet Name_____

Quadratic Formula Period_____Score_____

Solve each equation using the quadratic fomula. Find the exact solutions.

1. $x^2 - 6x + 7 = 0$

2. $5x^2 - 10x + 24 = 0$

3. $4x^2 - 8x + 1 = 0$

4. $8x^2 - 8x + 2 = 0$

5. $6n^2 + 4n + 11 = 0$

6. $3x^2 - 8x = 9$

7. $n^2 = -14 - 3n$

8. $-3y^2 = 6y - 10$

9. $3 - 8x - 5x^2 = 2x$

Solve each equation using the quadratic formula. Find the exact solution, then approximate the solution to the nearest hundredth.

10. $3x^2 - 10x + 5 = 0$

11. $3x^2 + 4x - 3 = 0$

12. $7x^2 - x - 12 = 0$

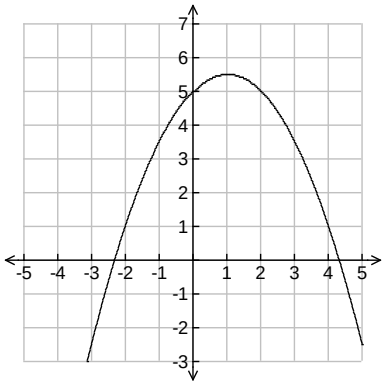
13. $5x^2 + 8x - 11 = 0$

14. $4x^2 + 4x = 22$

15. $2x^2 - 1 = 5x$

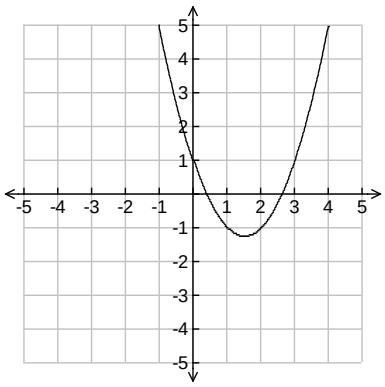
16. The graph of $f(x) = -\frac{1}{2}x^2 + x + 5$ is shown.

Use the graph to estimate the values of *x* for which $f(x) = 0$. Then write and solve an equation to find the values of *x* such that $f(x) = 0$. Round your answers to the nearest hundredth.



17. The graph of $f(x) = x^2 - 3x + 1$ is shown.

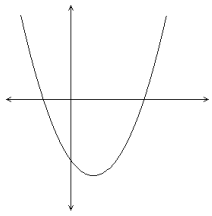
Use the graph to estimate the values of *x* for which $f(x) = 4$. Then write and solve an equation to find the values of *x* such that $f(x) = 4$. Round your answers to the nearest hundredth.



18. You can use the _____of a quadratic equation to determine the number and type of solutions.

For problems 17-19 the graph of a quadratic function $y = ax^2 + bx + c$ is shown. Tell whether the discriminant of $ax^2 + bx + c = 0$ is *positive, negative,* or *zero.*

19.



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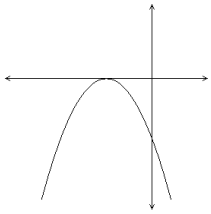

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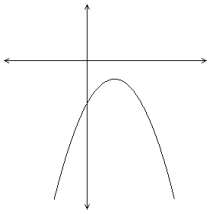


Evaluate the discriminant of each equation. Tell how many solutions each equation has and whether the solutions are real or imaginary.

22. $x^2 + 4x + 5 = 0$

23. $x^2 - 4x - 5 = 0$

24. $4x^2 + 20x + 25 = 0$

25. $2x^2 + 7x = -6$

26. $x^2 = 8x - 16$

27. The equation $h(t) = -16t^2 + 80t$ models the height h in feet reached in t seconds by an object propelled straight up from the ground. When will the object be at a height of 70 feet?

28. An object is propelled upward from the top of a 300 foot building. The path that the object takes as it falls to the ground can be modeled by $h = -16t^2 + 80t + 300$ where t is the time (in seconds) and h is the corresponding height (in feet) of the object. How long does it take the object to hit the ground?

29. The weekly revenue for a company is $R(p) = -3p^2 + 60p + 1060$, where p is the price of the company's product. What price will result in a revenue of $1200.

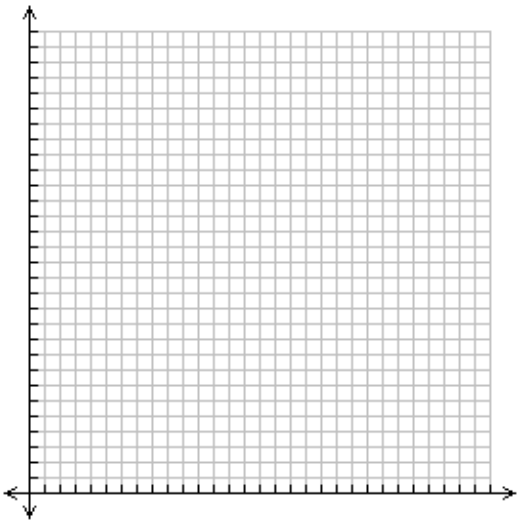
30. A biologist monitors the way a fish population in a local lake rises and falls. The population is modeled by the function $P(t) = 1000 + 5000t - 250t^2$, where t is the time in years since January 1, 2010 when the lake was stocked with fish.

a. In what month and year will the fish population be the same as it was on January 1, 2010?

b. Based on the model, in what month and year will the fish in the lake have died?

c. Based on the model, in what month and year will the fish population be maximized? What is the maximum number of fish?

d. Sketch a graph of f. Label your axes.



e. Does the population of fish in the lake reach 30,000? If yes, in which year (or years) does this happen? If this doesn't happen, explain how you know it does not.