

Solving Quadratics Test Review

*This review is due the day of the test and will count as a homework grade.
To be eligible for a retest, you must complete the review and turn it in the day of test.*

(#1-3) Factor the expression.

1. $x^2 - x - 30$ 2. $3x^2 + 11x + 6$ 3. $4x^2 + 13x + 10$

(#4-6) Solve by factoring.

4. $x^2 + 11x + 24 = 0$ 5. $x^2 - 15x + 50 = 0$ 6. $3x^2 + 11x + 10 = 0$

(#7-8) Solve the equation by finding square roots.

7. $4x^2 = 16$ 8. $3x^2 = 18$

9. The function $y = -16t^2 + 502$ models the height y in feet of a stone t seconds after it is dropped from the edge of a vertical cliff.

- a) How long will it take the stone to hit the ground? Round to the nearest hundredth of a second.
b) How high will the stone be after 3 seconds?

10. Simplify $\sqrt{-216}$ using the imaginary number i .

(#11-12) Write the number in the form $a + bi$.

11. $\sqrt{-36} + 5$ 12. $-1 - \sqrt{-50}$

(#13-14) Simplify the expression.

13. $(4 + 2i) + (-2 - 3i)$ 14. $(6 - i)(5 + 3i)$

(#15) Solve the equation (hint: your answer should have an i in it).

15. $4x^2 + 16 = 0$

(#16-17) Solve the quadratic equation by completing the square.

16. $x^2 + 14x + 42 = 0$ 17. $x^2 + 2x + 11 = 0$

(#18-19) Use the discriminant ($b^2 - 4ac$) to determine the type and number of solutions.

18. $-x^2 + 3x - 4 = 0$ 19. $x^2 + 5x - 3 = 0$

(#20-21) Use the Quadratic Formula to solve the equation.

20. $-2x^2 - 10x - 8 = 0$ 21. $x^2 + 7x - 9 = 0$

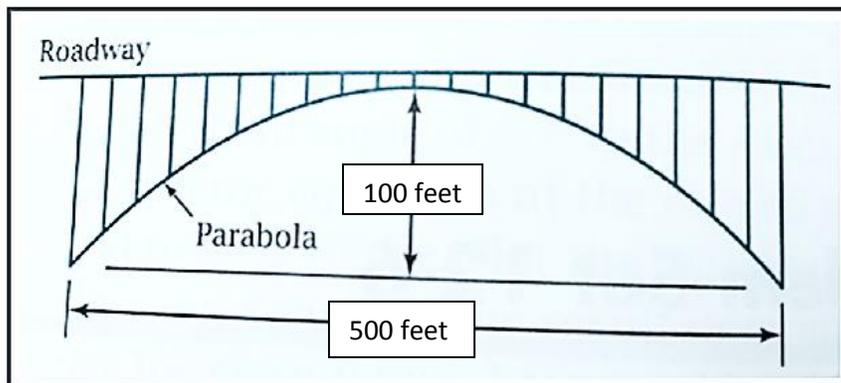
22. Solve $-x^2 - 5x - 4 \leq 0$ 23. Solve $3x^2 - 2x - 5 < 0$

24. Elena got tired of doing her Algebra 2 homework, so she threw her book up in the air. The equation for the book's height, in inches, is given by $y = -16x^2 + 28x$ where x is the time in seconds.

- a) For what values of x is the book at or above 12 inches?
b) How long is the book at or above 12 inches?

25. The area of a rectangular garden is 12 square feet. The length is 5 more than 3 times the width. Find the length and width of the garden.

26. The diagram below shows a bridge that is under construction. The span of the bridge is 500 feet, which is 100 feet below the vertex of the parabola. The roadway is horizontal and will pass 15 feet above the vertex. Write the quadratic equation, **in standard form**, for the parabolic support of the bridge. Assume the vertex is at the origin.



27. Find the solutions of the given quadratic equation: $9b^2 - 21 = 3b$

28. Enrique tossed a football out a window to his friend who was standing on a sidewalk below. The table shows the height of the football, $h(t)$, as it falls toward the ground over time, t , in seconds. Write a quadratic function to model the situation. (Hint: Use quadratic regression)

Time, t	.5	1	2	4	5
Height, $h(t)$	70.75	66	55	27	10

29. Solve the given quadratic equation: $2x^2 - 7x - 7 = 7$

30. Rewrite the quadratic function $f(x) = 3x^2 - 18x + 30$ vertex form. Does it open up or down?

31. Joe throws a dive stick into the pool for his children. Joe is standing at the edge of the pool and the dive stick leaves his hand at a height of 5 feet above the water. It moves upward and then down before splashing into the center of the pool. The dive stick is 10 feet in the air when it is 2 feet from Joe. It reaches a maximum height of 15 feet when it is a horizontal distance of 6 feet from Joe's hand. Write a quadratic function, **in standard form**, to represent the height of the dive stick in terms of its distance from Joe's hand.

32. The rectangular matting of a picture frame has a rectangular cutout for the photo. The matting is 20 inches by 24 inches. The distance from the edge of the mat to the edge of the photo is x inches in all directions. Use the diagram below to help you write an equation to represent the area of the matting.

