

3 Practice Test WITH CalcChat®

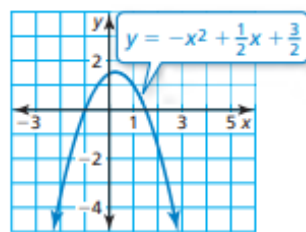
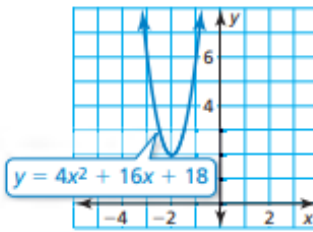
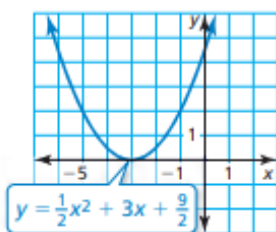


Solve the equation using any method. Explain your choice of method.

- $x^2 + 49 = 85$
- $0 = x^2 + 2x + 3$
- $6x = x^2 + 7$
- $(x + 4)(x - 1) = -x^2 + 3x + 4$

Explain how to use the graph to find the number and type of solutions of the quadratic equation. Justify your answer by using the discriminant.

- $\frac{1}{2}x^2 + 3x + \frac{9}{2} = 0$
- $4x^2 + 16x + 18 = 0$
- $-x^2 + \frac{1}{2}x + \frac{3}{2} = 0$



Solve the system of equations.

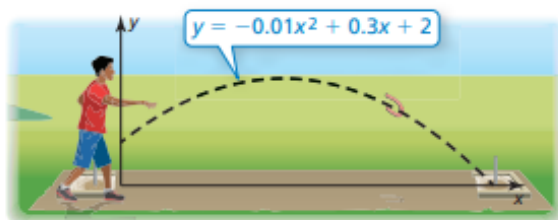
- $$\begin{aligned} x^2 + 66 &= 16x - y \\ 2x - y &= 18 \end{aligned}$$
- $$\begin{aligned} 0 &= x^2 + y^2 - 40 \\ y &= x + 4 \end{aligned}$$

Graph the system of inequalities.

- $$\begin{aligned} y &\leq x^2 - 5x + 4 \\ y &< -(x - 3)(x + 1) \end{aligned}$$
- $$\begin{aligned} y &\geq \frac{1}{4}x^2 - 2 \\ y &< -(x + 3)^2 + 4 \end{aligned}$$

12. Write $(3 + 4i)(4 - 6i)$ as a complex number in standard form.

13. You play a game of horseshoes. One of your tosses is modeled in the diagram, where x is the horseshoe's horizontal position (in feet) and y is the corresponding height (in feet). Find the maximum height of the horseshoe. Then find the horizontal distance the horseshoe travels. Justify your answer.



14. The shape of the Gateway Arch in St. Louis, Missouri, can be modeled by $y = -0.0063x^2 + 4x$, where x is the distance (in feet) from the left foot of the arch and y is the height (in feet) of the arch above the ground. For what distances x is the arch more than 200 feet above the ground? Justify your answer.

15. The *aspect ratio* of a TV is the ratio of the screen's width to its height. What are the width and the height of a 32-inch TV with an aspect ratio of 16 : 9? Justify your answer. (*Hint:* TV sizes refer to the diagonal length of the screen.)

