

Simplify the expression.

1. $\sqrt{80y^3}$

2. $\sqrt[3]{16b^7}$

3. $(\sqrt{14x^3})(\sqrt{6x})$

4. $-\sqrt{18} + 3\sqrt{8} - 4\sqrt{2}$

5. $\sqrt{3}(-5 + \sqrt{10})$

6. $(7 + \sqrt{3})(7 - \sqrt{3})$

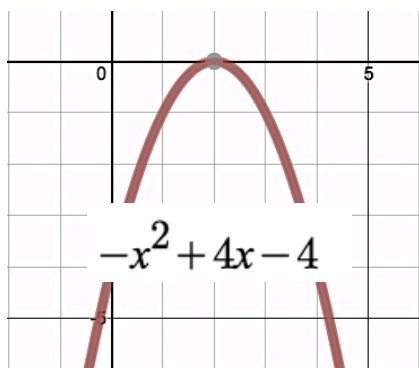
7. $(\sqrt{6} + 5)^2$

8. $\sqrt[3]{\frac{64x^5}{125y^9}}$

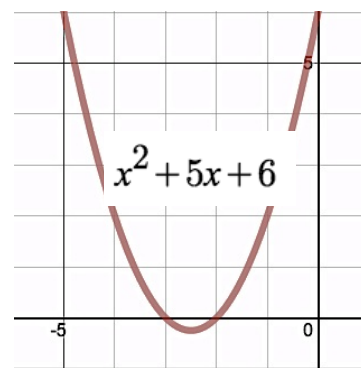
9. $\sqrt{\frac{6}{11}}$

Determine the solutions to the graphs of the quadratic function. Write your answer in set notation.

10.



11.



Solve the equation using square roots.

12. $2x^2 = 32$

13. $2x^2 - 40 = 10$

14. $-2(x + 7)^2 = -8$

15. A person in a hot air balloon drops a sandwich over the edge from a height of 64 feet. The function $h = -16t^2 + 64$ represents the height h (in feet) of the sandwich after t seconds. How long does it take the sandwich to hit the ground? Use the model $h_t = -16t^2 + h_0$.

Solve the equation by completing the square. If needed, write your answer in simplest radical form.

16. $x^2 + 3x + 2 = 0$

17. $y^2 + 12y + 20 = 0$

18. $w^2 + 16w - 22 = 0$

19. $t^2 + 10t + 14 = -7$

20. You want to enclose a rectangular vegetable garden with 60 feet of fence. How should you lay out the fence to maximize area?

Solve the equation using the Quadratic Formula. If needed, write your answer in simplest radical form.

21. $2y^2 + 3y - 20 = 0$

22. $-2z^2 + 9z - 10 = 0$

23. $w^2 - 7w - 13 = 0$

24. $4x^2 + 8x + 7 = 4$

- 25.** You throw a football from a height of 6ft to a friend with a velocity of 45 ft/sec. Your friend misses the ball and it lands on the ground. How long does it take for the ball to reach the ground? Use the model $h_t = -16t^2 + v_0t + h_0$

Key:

1. $4y\sqrt{5y}$	2. $2b^2\sqrt[3]{2b}$	3. $2x^2\sqrt{21}$
4. $-\sqrt{2}$	5. $-5\sqrt{3} + \sqrt{30}$	6. 46
7. $31 + 10\sqrt{6}$	8. $\frac{4x\sqrt[3]{x^2}}{5y^3}$	9. $\frac{\sqrt{66}}{11}$
10. $x = \{2\}$	11. $x = \{-3, -2\}$	12. $x = \{\pm 4\}$
13. $x = \{\pm 5\}$	14. $x = \{-9, -5\}$	15. $t = 2$ seconds
16. N/A	17. $y = \{-10, -2\}$	18. $w = \{-8 \pm \sqrt{86}\}$
19. $t = \{-7, -3\}$	20. N/A	21. $x = \left\{-4, \frac{5}{2}\right\}$
22. $x = \left\{\frac{5}{2}, 2\right\}$	23. $w = \frac{7 \pm \sqrt{101}}{2}$	24. $x = \left\{-\frac{3}{2}, 1\right\}$
25. $t \approx 2.94$ seconds		