

Name: _____

Guide

Date: _____

Solving Quadratics by Using Square Roots

Solve each quadratic equation.

1. $x^2 + 4 = 29$

$x^2 = 25$

$x = \pm 5$

2. $3x^2 - 7 = 47$

3. $x^2 + 11 = 16$

$x^2 = 5$

$x = \pm \sqrt{5}$

4. $(x+4)^2 = 121$

5. $\sqrt{(2x-3)^2} = \sqrt{9}$

$2x-3 = \pm 3$

$2x = 3 \pm 3$

$2x = 6, 0$

$x = 3, 0$

6. $(x-7)^2 = 99$

7. $(x+3)^2 + 6 = 18$

$(x+3)^2 = 12$

$x+3 = \pm 2\sqrt{3}$

$x = -3 \pm 2\sqrt{3}$

8. $(2x+6)^2 - 8 = 24$

9. $x^2 + 21 = 5$

$x^2 = -16$

No real answer

10. $3(x+4)^2 = 9$

11. $3(x^2 - 4) = 2x^2 - 1$

$3x^2 - 12 = 2x^2 - 1$

$x^2 - 12 = -1$

$x^2 = 11$

$x = \pm \sqrt{11}$

12. $\frac{2}{5}x^2 - 3 = 7$

13. $x^2 - 14x + 13 = 0$

$(x-13)(x-1) = 0$

$x-13=0, x-1=0$

$x=13, x=1$

14. $2x^2 - 7x = x^2 - 12$

15. $2x^2 - 15 = -7x$

$2x^2 + 7x - 15 = 0$

$(2x-3)(x+5) = 0$

$2x-3=0, x+5=0$

$2x=3, x=-5$

$x = \frac{3}{2}$

Word Problems

Waterfalls: Angel Falls in Venezuela is the tallest waterfall in the world. Water falls uninterrupted for 2421 feet before entering the river below. The height h above the river in feet of water going over the edge of the waterfall is modeled by $h(t) = -16t^2 + 2421$, where t is the time in seconds after the initial fall.

A. Estimate the time it takes for the water to reach the river.

B. Ribbon Falls in California has a height of 1612 ft. Approximately how much longer does it take water to reach the bottom when going over Angel Falls than when going over Ribbon Falls?

Safety: If a tightrope walker falls, he will land on a safety net. His height h in feet after a fall can be modeled by $h(t) = 60 - 16t^2$, where t is the time in seconds. The safety net is 11 feet off the ground.

How many seconds will the tightrope walker fall before landing on the safety net?
