5.5 Solve Quadratic Equations by Finding Square Roots

Square Root:

Radical:

$$\sqrt{x}$$

Radicand:

Radicals are simplified if:

Simplifying Radicals Review:

Ex 1:   Ex 2:   Ex 3:

Ex 4:   Ex 5:

Simplifying with Conjugates

Ex 6:   Ex 7:

<u>Solve Quadratics when b = 0</u>

Ex 8:   Ex 9:

Ex 10:   Ex 11:

Brust Luthor is standing at the top of a 300 foot tall building above an unsuspecting Superman. He plans to drop a piece of Kryptonite on the Superman and just needs to know how long it will take to land.

The equation $h = -16t^2 + h_0$ models any DROPPED object, where h is the current height, t is time (in seconds) and h_0 is the initial height.

Using this model, how long will the kryptonite take to hit the ground?

You try!
1) Simplify   2) Solve

Summarize your notes:

5.5 Practice Problems

Directions: Simplify.		
1) $-8\sqrt{112}$	2) $2\sqrt{20} \cdot 3\sqrt{2}$	3) $-3\sqrt{15} \cdot 4\sqrt{3}$

4) $\dfrac{2}{\sqrt{5}}$

5) $\dfrac{5}{4-2\sqrt{3}}$

6) $\dfrac{5}{2+\sqrt{2}}$

Directions: Solve.

7) $p^2 + 5 = 16$

8) $10x^2 - 10 = 110$

9) $9r^2 + 7 = 232$

10) $2n^2 + 5 = 37$

11) $7r^2 - 6 = 246$
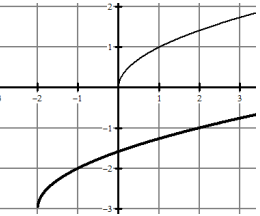
12) $\dfrac{1}{5}(x + 4)^2 = 10$

13) $4(x - 6)^2 = 100$

14) $(g - 5)^2 + 4 = 53$

15) $\dfrac{h^2}{8} + 6 = 10$

16) $\dfrac{1}{2}(x + 9)^2 - 12 = 2$

Algebra Skillz		
Below, the graph of $f(x) = \sqrt{x + 2} - 3$ is sketched in bold. Its parent function $f(x) = \sqrt{x}$ is represented by the thin curve. 1) Describe the translation of the parent graph. 2) How does the translation relate to the equation?	3) $4\sqrt{18} - 4\sqrt{32}$ 4) $-\sqrt{3}(4\sqrt{6} - 2\sqrt{10})$	5) Solve: $(2x + 5)(x - 1) = 0$ 6) Factor and solve. $x^2 + 15x + 36 = 0$

5.5 Application and Extension

1) Simplify: $\dfrac{\sqrt{2}}{\sqrt{6}+4}$

2) Solve: $\dfrac{1}{6}(x + 8)^2 + 5 = 7$

The equation $h = -16t^2 + h_0$ models any DROPPED object, where h is the current height, t is time (in seconds) and h_0 is the initial height.

3) Brust Luthor, BEANE, and Magne-kelly each pick an item to throw down at people on the street to satisfy their evil intentions for the day.

a) Brust Luthor picked a 5 pound rock and a building that was 425 feet tall. How long will it take for his rock to hit the ground?

b) BEANE picked a 10 pound bowling ball and a building that was 375 feet tall. How long will it take for his bowling ball to hit the ground?

c) Magne-kelly picks a 50 pound car door and a building that was 1200 feet tall. How long will it take for his car door to hit the ground?

4) The Evil Algebros have had a change of heart and want to now do some good in the world. They decide to help with the Make-A-Wish Foundation. The Make-A-Wish Foundation grants wishes to children with life threatening medical conditions in the hope that it makes their lives a little bit better.

a) BEANE decides he will grant as many wishes as he possibly can by take kids and giving them a tour of the sewers of Gotham. He derives a formula that will allow him to calculate how many wishes he can grant. The formula is, $y = -.25(x - 25)^2 + 100$, where x is the # of days it takes and y is the # of wishes granted. How long will it take him to grant 84 wishes?

b) Magne-Kelly comes up with his own formula and decides he'll be able to put kids on piece of metal and make them feel like they are flying. His formula is, $y = -0.1(x - 15)^2 + 95$. How long will it take him to grant 85 wishes?

c) Brust Luthor decides he'll show kids Superman's Fortress of Solitude to kids who want to see it and derives the following formula, $y = -0.2(x – 20)^2 + 98$. How long will it take him to grant 78 wishes?

SAT PREP Below are sample SAT questions. The SAT is the main standardized test that colleges look at for admission. One is multiple choices; the other is free response where you must grid in your answer. Blow it up.

MULITPLE CHOICE	GRID IN
Which of the following are not conjugates?	Find the principal root for the following: $2(x – 8)^2 + 5 = 13$

(A) $(\sqrt{2} – 4)(\sqrt{2} + 4)$
(B) $(\sqrt{2} + 4)(\sqrt{2} + 4)$
(C) $(\sqrt{2} + 4)(\sqrt{2} – 4)$
(D) $(4 – \sqrt{2})(4 + \sqrt{2})$