

Solving Quadratics by Square Roots

Without using a calculator, see how many of the first 12 perfect squares you can name.

Simplifying Non-Perfect Squares: Find a perfect square that goes into the radicand, break into 2 radicals, and simply. Repeat if possible.

$\sqrt{12}$

$\sqrt{20}$

$\sqrt{30}$

$\sqrt{75}$

Taking the Square Root: Using your calculator, calculate the following.

$(-8)^2 =$

$(8)^2 =$

$(5)^2 =$

$(-5)^2 =$

Without using your calculator, take the square root of the following integers.

16

49

100

12

1

We are going to use this information to help us solve quadratic equations by taking the square root.

When solving by square roots, you want to:

① _____

② _____

③ _____

④ _____

Steps: Isolate whatever is being squared, square root both sides (include +/- and break into two equations), simplify the radicals if possible, solve for x

1) $3x^2 + 7 = 55$

2) $(x - 7)^2 = 81$

3) $x^2 - 16 = 0$

4) $-3x^2 - 6 = -x^2 - 12$

5) $(x + 1)^2 = 50$

6) $4x^2 - 9 = 0$

7) $-7(x - 10)^2 - 6 = -258$

8) $(x + 3)^2 - 20 = 7$

Solving Quadratics by Square Roots – Practice

For each of the following questions, find the roots.

1) $x^2 = 25$

2) $2x^2 = 98$

3) $x^2 - 1 = 0$

4) $9x^2 - 16 = 0$

5) $x^2 + 9 = 25$

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

7) $(x - 2)^2 + 9 = 25$

8) $(4x - 2)^2 + 9 = 25$