

Warm up

1. $\sqrt{0.04}$

4. $\sqrt{144}$

2. $\sqrt{-144}$

5. $-\sqrt{144}$

3. $\sqrt{125}$

6. Evaluate the expression when
-
- $a = -3$
- ,
- $b = 7$
- , and
- $c = 5$

$$\sqrt{b^2 - 4ac}$$

Homework Questions?

Self Scoring Scale

4- I can *summarize* the concepts and explain it to others.

3- I can *apply* the concepts to answer questions correctly.

2- I can *apply* the concepts but with some *mistakes*.

1- I *need help* to know how to apply the concepts.

0- I *can't* apply the concepts even with help.

9.2 Solving Quadratic Equations by Finding Square Roots

Goals: • Solve a quadratic equation by finding square roots.

EQ: What is the order of solving equations?

The Unit Organizer

④ BIGGER PICTURE Algebra 1.5

DATE _____ Mo/Date/Year

② LAST UNIT/Experience Exponents

① CURRENT UNIT Quadratic Equations

③ NEXT UNIT/Experience Factoring

⑧ Student Activities or Assignments

⑤ UNIT MAP

is about

```

    graph TD
      A((Graphing and solving quadratic equations)) --> B[Finding square roots]
      A --> C[Simplifying radicals]
      A --> D[Graphing quadratics]
      A --> E[Quadratic Formula]
      A --> F[Finding the discriminant]
      style C stroke:#f00,stroke-width:2px
  
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⑦ UNIT SELF-TEST QUESTIONS

1. How can you solve a quadratic equation by using square roots?
2. How do you simplify radical expressions?
3. What steps are necessary to graph a quadratic equation?
4. How is the quadratic formula used to solve a quadratic equation?
5. How is the discriminant found and what information does it tell you?

Solve
Simplify
Graph
Compare.

⑥ UNIT RELATIONSHIPS

Vocabulary

Quadratic Equation:

must have $x^2 = \#$

$$\sqrt{\#} = \pm$$

SOLVING $x^2 = d$ BY FINDING SQUARE ROOTS

- If $d > 0$, then $x^2 = d$ has 2 solutions: $x = \frac{\pm}{\quad}$.
- If $d = 0$, then $x^2 = d$ has 1 solution: $x = \underline{0}$.
- If $d < 0$, then $x^2 = d$ has NO solution.

$$\sqrt{x^2} = \sqrt{0}$$

$$x = 0$$

$$\sqrt{x^2} = \sqrt{-7}$$

No
Soln

$$\sqrt{x^2} = \sqrt{4}$$

$$x = 2$$

$$\text{or } x = -2$$

$$x = \pm 2$$

Example 1: Solve Quadratic Equations

Solve the equation. Write the solutions as integers if possible. Otherwise, write them as radical expressions.

a) $\sqrt{k^2} = \sqrt{17}$

$$k = \pm\sqrt{17}$$

Round .01

$$k = \pm 4.123\dots$$

$$k = \pm 4.12$$

b) $\sqrt{p^2} = \sqrt{-4}$

NO
Soln

Example 2: Rewrite Before Finding Square Roots

Solve $4x^2 - 100 = 0$.

$$+100 \quad +100$$

$$\frac{4x^2}{4} = \frac{100}{4}$$

$$\sqrt{x^2} = \sqrt{25}$$

$$x = \pm 5$$

$$x = 5, x = -5$$

Try It Solve the equation or write *no real solution*. Write the solution as integers if possible. Otherwise, write them as radical expressions.

1) $\sqrt{x^2} = \sqrt{13}$

$$x = \pm \sqrt{13}$$

$$x = \pm 3.61$$

2) $\sqrt{x^2} = \sqrt{16}$

$$x = \pm 4$$

3) $x^2 - 169 = 0$

$$+169 \quad +169$$
$$\sqrt{x^2} = \sqrt{169}$$

$$x = \pm 13$$

4) $54 - 6x^2 = 0$

$$-54 \quad -54$$
$$\frac{-6x^2}{-6} = \frac{-54}{-6}$$

$$\sqrt{x^2} = \sqrt{9}$$
$$x = \pm 3$$

Summary

EQ: What is the order of solving equations?

① () Distribute

② Combine Like Terms

* ③ + or -

④ \div $\frac{\quad}{\quad} \times$

⑤ $\sqrt{x^2} = \pm$

9.2 Homework

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