

(Day 15) 1/28 Quadratic Formula Practice

Friday, January 3, 2020 1:14 PM

This lesson plan from when Verity observed captures this well.

Especially in the **Quadratic Formula Focused Practice activity** and with the **Extra Challenge Problems** at the bottom of the lesson page.

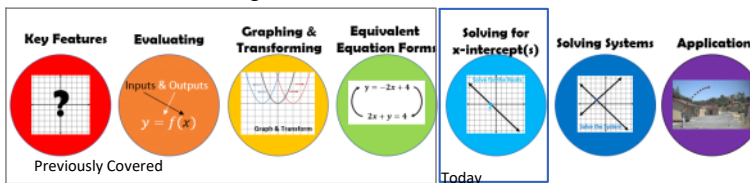
Outline:

- Warm Up
- Simplifying Radicals Kahoot
- **Quadratic Formula Focused Practice**
 - Observations
- Generalizing our observations
- If time allows, PFTW work time

Announcement:

- HW: 40+ min on ALEKS or Quadratic Formula Practice
- PFTW #1 presentations 2/3 or 2/4 - get started TODAY!

Function Framework Progression:



Warm Up

1. Simplify the following radicals
 - a. $\sqrt{72}$
 - b. $2\sqrt{200x^2}$
 - c. $\sqrt{20x^7}$
2. Using the fact that: $\sqrt[n]{a} = (a)^{\frac{1}{n}}$, re-write the work from #1
For example, $\sqrt{4^2} = (4^2)^{\frac{1}{2}} = 4^1 = 4$
 - a. $\sqrt{72}$
 - b. $2\sqrt{200x^2}$
 - c. $\sqrt{20x^7}$
3. No calculator: Place these in order from least to greatest: $\frac{1}{\sqrt{3}}$ $\frac{1}{2}$ $\frac{1}{\sqrt{5}}$ 0 $\frac{1}{2\sqrt{2}}$ 1 $\frac{1}{\sqrt{2}}$

Simplifying Radicals Kahoot

Like usual, use your name or some clever variation of your name.

Get out a place to write down your work. If you want to complete the Kahoot on your phone and use OneNote to jot down work, that's fine.

Quadratic Formula Practice

- You must solve at least three problems from each category (lightning bolt, sun, moon).
- In your table groups, determine a strategy to complete at least 6 problems from each category.
- Make sure your work is clear and organized as we are going to look more closely at it soon.

State the Quadratic Formula:

Need a reminder: <https://www.youtube.com/watch?v=2lbABbfU6Zc>

Questions to answer on your own: Why have I grouped the problems into the three categories (sun, moon, lightning bolt)? What makes a problem belong to a specific category? Hint: Look for patterns in your work and your answers.

Solve each equation with the quadratic formula.

1) $x^2 - 4x + 4 = 0$

2) $x^2 + 2x + 1 = 0$

3) $-2x^2 - 12x - 18 = 0$

4) $-x^2 - 14x - 49 = 0$

5) $\frac{1}{2}x^2 - 6x + 18 = 0$

6) $x^2 - 8x = -16$

7) $x^2 + 10x = -25$

8) $3x^2 + 24x = -48$

9) $\frac{1}{4}x^2 + 5x = -25$

10) $x^2 - 20 = -20$



Solve each equation with the quadratic formula.

1) $6n^2 - 9n - 105 = 0$

2) $b^2 - 9b - 136 = 0$

3) $2x^2 + 2x - 120 = -8$

4) $n^2 - 12n + 39 = 4$

5) $6n^2 - 6 = 0$

6) $3n^2 - 8n = 35$

7) $2x^2 - x - 136 = 0$

8) $3a^2 - 6a - 144 = 0$

9) $3m^2 + 12m - 94 = 2$

10) $4p^2 - 3p - 13 = 7$



Solve each equation with the quadratic formula.

1) $2b^2 - 3b + 3 = 0$

2) $3n^2 - 3n + 1 = 0$

3) $2k^2 - 2k + 5 = 3$

4) $3k^2 + 5 = 3$

5) $k^2 = -k - 1$

6) $x^2 + 2 = 0$

7) $6p^2 - 3p + 2 = 0$

8) $4a^2 - a + 8 = 0$

9) $7b^2 - b + 4 = 3$

10) $8m^2 - 5m - 4 = -6$



Patterns observed in our work



Extra Challenge:

1. Is the mean of the squares of two numbers greater than, or less than, the square of their means?
2. If $i = \sqrt{-1}$, for which of the following values of n does $i^n + (-i)^n$ have a positive value?
3. The zeroes of the function $f(x) = x^2 - ax + 2a$ are integers. What is the sum of the possible values of a ?