Unit 7 Lesson 18: Solving Quadratics

1 Math Talk: Operations with Roots (Warm up)

Student Task Statement

Evaluate mentally:

$\sqrt{100} - 15$

$\sqrt{125 - 10^2}$

$20 - 2\sqrt{49}$

$\sqrt{4^2 + 3^2}$

2 Checking Brother's Work

Student Task Statement

Priya's older brother is working on some higher-level math work and claims that $x = 3$ is a solution to the equation $x^3 - 5x^2 - 2x =$ -24.

1. Explain how she could check that his solution is correct using each of these tools.
   a. A basic calculator

   b. A graphing tool

2. When looking at his work, Priya sees that he has the equation $(x - 3)(x^2 - 2x - 8) = 0$. Knowing the zero product property holds, Priya recognizes that this equation means $x - 3 = 0$ or $x^2 - 2x - 8 = 0$ for this question. Find 2 other solutions to the original equation. Explain or show your reasoning.

3 Steps to Using the Quadratic Formula

Student Task Statement

The quadratic formula solves equations of the form $ax^2 + bx + c = 0$ using the equation $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.

Andre wants to use the quadratic formula to solve $x^2 - 7x = -12$.

1. What should Andre do first?
2. What values of a, b, and c should he use?
3. After substituting the values into the quadratic formula, what is the order he should use to calculate the solutions?
4. Use the quadratic formula to solve the equation.
5. Check your solutions.