

Day 5: Imaginary Numbers and Quadratics

Simplify the following radicals.

1. $\sqrt{-25} = \pm 5i$

2. $\sqrt{-32x^2y^4} = \pm 4ixy^2\sqrt{2}$

3. $\sqrt{-200} = \pm 10i\sqrt{2}$

4. $\sqrt{-36x^5} = \pm 6ix^2\sqrt{x}$

5. $\sqrt{-20xy^3z^2} = \pm 2iyz\sqrt{5xy}$

7. $\sqrt{-146} = \pm i\sqrt{146}$

Solve the following quadratics using the square root method. Express all answers in simplest radical form.

1. $x^2 + 20 = 0$

$x^2 = -20$

$x = \pm 2i\sqrt{5}$

2. $-3x^2 - 96 = 0$

$x^2 = -32$

$x = \pm 4i\sqrt{2}$

3. $(x+1)^2 + 10 = 4$

$(x+1)^2 = -6$

$x = \pm i\sqrt{6} - 1$

4. $18x^2 - 4 = -40$

$18x^2 = -36$

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

$x = \pm i\sqrt{2}$

5. $-(x+4)^2 = 4$

$\sqrt{(x+4)^2} = \sqrt{-4}$

$x+4 = \pm 2i$

$x = \pm 2i - 4$

6. $2x^2 = -56$

$\sqrt{x^2} = \sqrt{-28}$

$x = \pm 2i\sqrt{7}$