

# Reasoning with Equation and Inequalities - Worksheet 1

## Answer Key

Solve the following equations:

1.  $3x + x^2 - 1 = 4x^2 - 4$

$$x = \frac{1 \pm \sqrt{5}}{2}.$$

6.  $2x + 3 = -\frac{1}{2}x + 1$

$$x = -\frac{4}{5}.$$

2.  $\frac{1}{x} = 2x + 5$

$$x = \frac{-5 \pm \sqrt{33}}{4}.$$

7.  $2x + 4 = 3 + 2x - 1$

No solution.

3.  $x^4 + 5x^2 - 6 = 0$

$x = -1, 1$ , and  $\pm\sqrt{-6}$ , which are imaginary roots.

8.  $x^3 + x^2 = 4x + 4$

$$x = -2, -1, \text{ and } 2.$$

4.  $3x + 5 = 4x - 10$

$$x = 15.$$

9.  $x^3 + 4x^2 - 15x = 10x^2 - 21x$

$$x = 0, 3.$$

5.  $x^2 + 3x - 17 = 1$

$$x = -6 \text{ and } 3.$$

10.  $\sqrt{x+1} = \sqrt{x-2} + 1$

$$x = 3.$$

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