

Vocabulary and Review:

Linear:

Quadratic:

Cubic:

Absolute value:

Radicand:

Index:

Exponent:

Square root:

Cube root:

Extraneous:

Solving an equation means finding solutions/numbers that makes the equation true.

Steps for solving an equation that only has 1 variable:

1. Isolate the parent function and variable.
2. Do the inverse of the parent function.

**Remember if you take an even root, the answer must have \pm on it.

3. Solve for the variable.
4. Check. Write if there are any extraneous answers or restrictions.

**even roots—

**odd roots—

EXAMPLES: Solve for the variable, include both real and imaginary solutions. State the restrictions (domain). Write your solutions in simplest form.

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

2. $\frac{x-2}{3} = \frac{5}{9}$

3. $9x^2 - 20 = 5$

4. $5x^3 + 2 = 42$

5. $x^4 = 48$

6. $(x + 4)^2 + 5 = 21$

7. $\sqrt{3x+1} - 4 = 0$

8. $5\sqrt{x} + 15 = -10$

9. $3 - 2\sqrt[3]{x+1} = 5$

10. $4 - 5\sqrt[4]{x+1} = -6$

11. $3\sqrt[5]{10x-7} = 9$

12. $\sqrt{x-4} = x-4$

Steps for solving an equation that only has more than 1 variable:

1. Set equation equal to 0.
2. Factor or do quadratic formula.
3. Set each factor equal to 0 or simplify the quadratic formula.
4. Check. Write if there are any extraneous answers.

EXAMPLES: Solve for the variable, include both real and imaginary solutions. State the restrictions (domain). Write your solutions in simplest form.

1. $4x^2 = 12x$

2. $x^2 + 8x = 10$

3. $3x^2 - 13x - 10 = 0$

Steps for Solving Absolute Value Equations:

1. Get the absolute value alone on one side of the equation with a number on the other side.
2. Write **2** equations, one for the positive option and one for the negative option that gives you that answer. Solve.
3. If the number opposite the absolute value is negative, there is **no solution**.

1. $|x| = 8$

2. $\left|\frac{x}{5}\right| = 4$

3. $|x-3| = 9$

4. $\frac{1}{3}|x-7| = 2$

5. $2|4x|-8 = 16$

6. $6|5x-1|+4 = 88$