

Section 7.3 Extra Practice

1. Solve each absolute value equation.
Verify the solution.

a) $|x + 1| = 2$ b) $|x - 3| + 1 = 0$

c) $|2x| = -5$ d) $\left|\frac{x}{4}\right| = 0$

2. Determine whether $x = 1$ is a solution to each equation.

a) $2|x - 5| = 8$

b) $|3x - 2| + 6 = 12$

c) $|-2x - 3| = 5$

d) $3|2x - 2| = 0$

3. Solve each absolute value equation algebraically.

a) $|x - 5| = 3x + 4$

b) $|3m + 2| = m$

c) $|-x + 5| = x - 5$

d) $|2n| = 3n - 8$

4. Solve each equation.

a) $|x^2 - 2x| = 1$

b) $|x^2 - 3x| = 4$

c) $8 = |0.5x^2 + 3x|$

d) $3 = |-4x^2 + 8x|$

5. Solve each absolute value equation.

a) $|4x| = x^2 - 5$

b) $2x^2 = |5x + 3|$

c) $|2(x - 4)^2 - 5| = 3$

d) $0 = |x^2 - 2x - 3| - 4$

6. Determine whether $x = 2$ is a solution to each equation.

a) $x + 1 = |x^2 - 1|$

b) $|x^2 - 3x| = 3x - 8$

c) $2(x - 4)^2 - 6 = |0.5x + 1|$

d) $|x + 2| - 3 = -4x^2 + 8x + 5$

7. Given the equation $|x^2 - 4| = k$, determine the value of k for each situation.

a) There is one solution only.

b) There are two solutions.

c) There are three solutions.

d) There are four solutions.

8. Mark and Chloe each solve $|x - 12| = x^2$.
Mark solves the equation algebraically, while Chloe solves the equation graphically.
Who is correct? Explain your reasoning.

Mark's solution:

$$|x - 12| = x^2$$

$$x - 12 = x^2 \quad \text{or} \quad -x + 12 = x^2$$

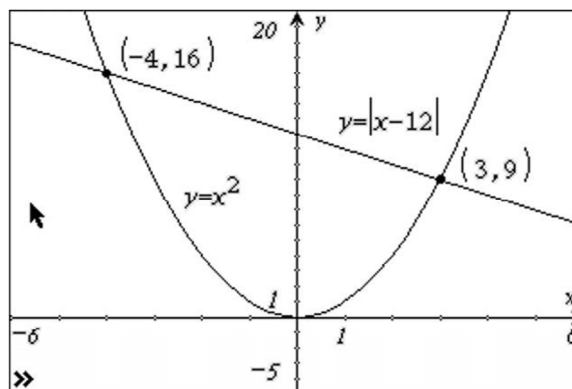
$$0 = x^2 - x + 12 \quad \quad 0 = x^2 + x - 12$$

No solution

$$0 = (x - 4)(x + 3)$$

$$x = 4 \text{ or } x = -3$$

Chloe's solution:



9. Evanka graphed the functions $f(x) = \frac{x}{2}$ and

$g(x) = |-x^2 + 2|$ on the same set of axes.

a) How could she use the graph to

solve $|-x^2 + 2| - \frac{x}{2} = 0$?

b) State the solution. Express the solution to the nearest hundredth.

