

Section 7.3 Absolute Value Equations

Use the definition of absolute value when solving absolute value equations algebraically.

There are two cases to consider:

1. When $f(x)$ is positive or zero
2. When $f(x)$ is negative

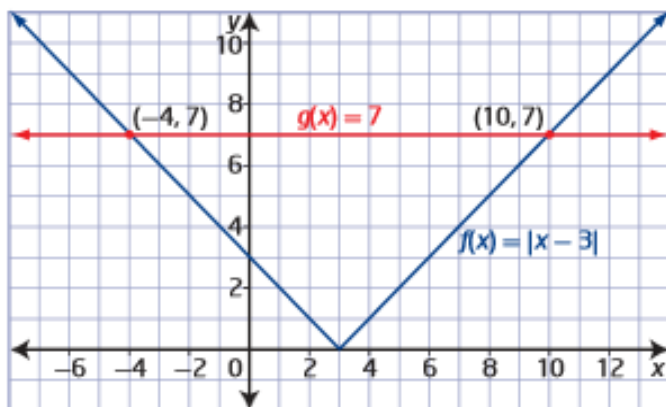
Example 1

Solve an Absolute Value Equation

Solve $|x - 3| = 7$.

Turn Over

This can also be shown graphically. Sketch both graphs on the same axis. The x -values where they intersect is the solution.



Example 2

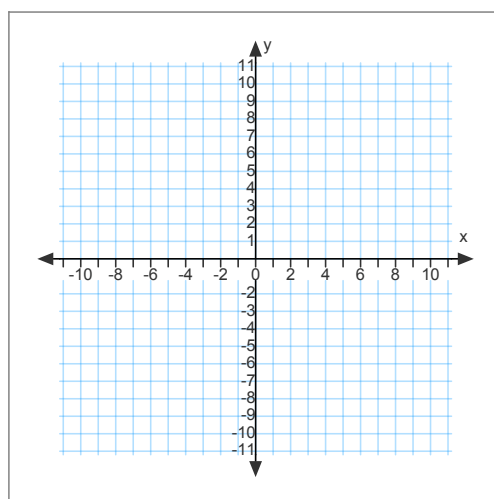
Solve $|6 - x| = 2$ graphically and algebraically.

Turn over

Example 3

Absolute Value Equation With an Extraneous Solution

Solve $|2x - 5| = 5 - 3x$.



Example 3: Your Turn

Solve $|x + 5| = 4x - 1$.

Turn Over

Example 4

Absolute Value Equation With No Solution

Solve $|3x - 4| + 12 = 9$.

Example 4: Your Turn

Solve $|4x - 5| + 9 = 2$.

Example 5

Solve an Absolute Value Equation Involving a Quadratic Expression

Solve $|x^2 - 2x| = 1$.

Turn over

Example 6

Solve an Absolute Value Equation Involving Linear and Quadratic Expressions

Solve $|x - 10| = x^2 - 10x$.

Key Ideas p. 388

Assign p. 389 #'s 1, 2, 4(bc), 5(de), 6(ade), 10, 11, 15, 23