

In this lesson we will be solving **absolute value equations**.

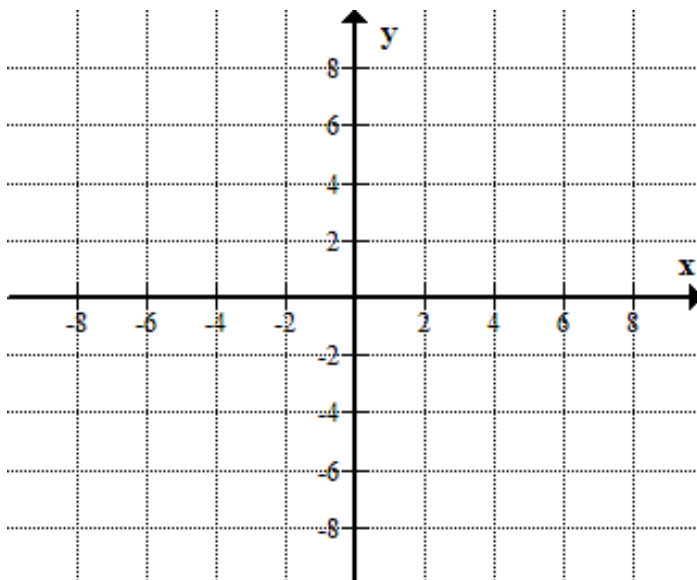
They can be solved graphically or algebraically. The first example shows both methods. The rest of the examples will be solved algebraically only.

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Solving Absolute Value Equations:

Solve the equation $|3 - 2x| = 6$ for x

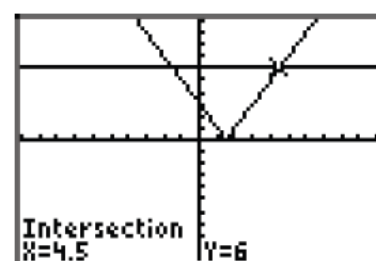
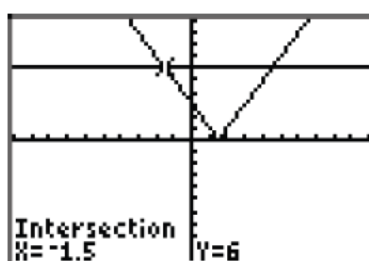
- Two strategies: Graphical Solution or Algebraic Solution



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Graphical Strategy:(using graphic calculator)

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X= Plot1 Plot2 Plot3
Y1 abs(3-2*X)
Y2 6
Y3 =
Y4 =
Y5 =
Y6 =
Y7 =
```



check

Algebraic Strategy:

Case 1: expression inside absolute value symbol is positive or zero

Case 2 : inside is negative

You must always check the positive case and negative case

Remember $|?| = 5$

Two answers could be +5 or -5

$$|3 - 2x| = 6$$

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Example

$$|6 - x| = 2$$

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Absolute Value Equation With an Extraneous Solution

(invalid solution)

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

** always verify

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Absolute Value Equation With No Solution

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

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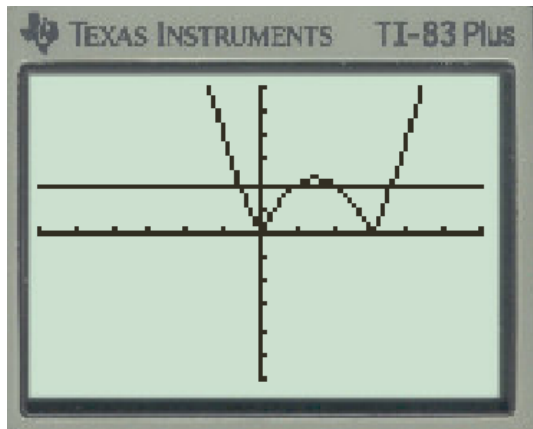
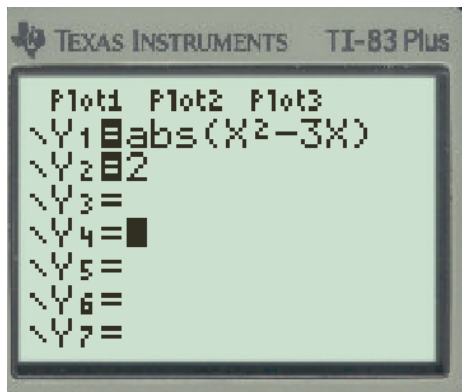
What about a quadratic absolute value equation??

Your Turn

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

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Check on calculator



Solve an Absolute Value Equation Involving Linear and Quadratic Expressions

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

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