

Questions

1.9 Essential Question: How DO YOU SOLVE ABSOLUTE VALUE EQUATIONS

$|x|$ "Absolute value of x " : distance away from zero. AND INEQUALITIES

$| -5 | = 5 = | 5 |$ $| x - 3 | = 4$ " $x - 3$ is 4 units away from zero "

Solving absolute value equations:

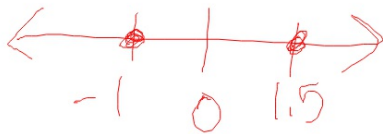
- 1) Isolate Absolute Value:
(if necessary)

get absolute value
alone on one side

- 2) Write 2 Equations
and Solve:

one equation w/ positive
answer
one equation w/ negative
answer

- 3) Graph Solution:



$$3|4w-1|-5=10$$

like parentheses
a

$$\begin{array}{r} 3a-5=10 \\ +5 \quad +5 \\ \hline 3a=15 \\ \frac{3a}{3}=\frac{15}{3} \\ a=5 \end{array}$$

$$|4w-1|=5$$

$$\begin{array}{r} 4w-1=5 \\ +1 \quad +1 \\ \hline 4w=6 \\ \frac{4w}{4}=\frac{6}{4} \\ w=1.5 \end{array}$$

$$\begin{array}{r} 4w-1=-5 \\ +1 \quad +1 \\ \hline 4w=-4 \\ \frac{4w}{4}=\frac{-4}{4} \\ w=-1 \end{array}$$

$w=1.5$	$w=-1$
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Example 1: Solve and graph the solution

Challenge
*a) $|2x+5|-4=3x$

$$x=1, -1.8$$

b) $4-3|m+2|=-14$

$$m=4, -8$$

c) $|d+\frac{1}{2}|+\frac{3}{4}=0$

No Solution

$$|d+\frac{1}{2}| = -\frac{3}{4}$$

can't have a
neg. abs. value

d) $3|5y-7|-6=24$

$$3a-6=24$$

$$\frac{3a}{3} = \frac{30}{3}$$

$$a=10$$

$$|5y-7|=10$$

$$5y-7=10 \quad 5y-7=-10$$
$$\boxed{y=3.4, -0.6}$$