

Review

$$|5| = 5 \quad |-5| = 5$$

Solve $|x| = 5$

<u>(+) case</u>	<u>(-) case</u>
$x = 5$	$x = -5$

Solve $|x| = -2$

No solution

Examples1. Solve each for x , then graph:

1. $|4x| = 20$

(+) case and(-) case

$$\frac{4x}{4} = \frac{20}{4}$$

$$x = 5$$

$$\frac{4x}{4} = \frac{-20}{4}$$

$$x = -5$$

2. $|20 - 5m| = 50$

(+) case and(-) case

$$\frac{20 - 5m}{-20} = \frac{50}{-20}$$

$$-5m = 30$$

$m = -6$

$$\frac{20 - 5m}{-20} = \frac{-50}{-20}$$

$$-5m = -70$$

$m = 14$

3. $|5 - 2x| + 10 = 6$

$$\frac{-10 \quad -10}{|5 - 2x|} = -4$$

() case and() case

→ No solution

4. $|4 - 3x| - 3 = -1$

$$\frac{+3 \quad +3}{|4 - 3x|} = 2$$

(+) case and(-) case

$$\frac{4 - 3x}{-4} = \frac{2}{-4}$$

$$\frac{-3x}{-3} = \frac{-2}{-3}$$

$x = \frac{2}{3}$

$$\frac{4 - 3x}{-4} = \frac{-2}{-4}$$

$$\frac{-3x}{-3} = \frac{-6}{-3}$$

$x = 2$

Homework!!

Worksheet on Solving Absolute Value Equations

Solving Absolute Value Equations

Solve each equation. Write both (-) case and (+) case for each problem.

1) $|m| = 3$

(+) case(-) case

2) $|x| = -10$

(+) case(-) case

3) $|b + 8| = 7$

(+) case(-) case

4) $|5k| = 10$

(+) case(-) case

5) $\left|\frac{b}{2}\right| = 5$

(+) case(-) case

6) $|-3n| = 15$

(+) case(-) case

7) $\left|\frac{x}{7}\right| = -3$

(+) case(-) case

8) $|-4 + n| = 4$

(+) case(-) case

9) $|v - 3| + 5 = 18$

$$\begin{array}{r} -5 \quad -5 \\ |v - 3| = 13 \end{array}$$

(+) case(-) case

10) $-8 + |b + 10| = -8$

(+) case(-) case

11) $|x - 9| + 3 = 20$

(+) case(-) case

12) $|2n| - 3 = 17$

(+) case(-) case

$$13) -5|4x + 7| = -75$$

[\(+\)](#) case

[\(-\)](#) case

$$14) -4 + |5 - 6x| = -3$$

[\(+\)](#) case

[\(-\)](#) case

$$15) |-10k + 2| - 10 = 92$$

[\(+\)](#) case

[\(-\)](#) case

$$16) 7|-7 + p| = -70$$

[\(+\)](#) case

[\(-\)](#) case

$$17) \frac{|6n + 1|}{10} = 5$$

[\(+\)](#) case

[\(-\)](#) case

$$18) \frac{|-3x + 1|}{8} = 1$$

[\(+\)](#) case

[\(-\)](#) case

$$19) |3m + 1| - 5 = 17$$

[\(+\)](#) case

[\(-\)](#) case

$$20) |9 - 6x| - 1 = -4$$

[\(+\)](#) case

[\(-\)](#) case

$$21) |8 - 8x| + 2 = 10$$

[\(+\)](#) case

[\(-\)](#) case

$$22) -4|-n - 8| = -52$$

[\(+\)](#) case

[\(-\)](#) case

Answers to Solving Absolute Value Equations

1) $\{3, -3\}$

5) $\{10, -10\}$

9) $\{16, -10\}$

13) $\left\{2, -\frac{11}{2}\right\}$

17) $\left\{\frac{49}{6}, -\frac{17}{2}\right\}$

21) $\{0, 2\}$

2) No solution.

6) $\{-5, 5\}$

10) $\{-10\}$

14) $\left\{\frac{2}{3}, 1\right\}$

18) $\left\{-\frac{7}{3}, 3\right\}$

22) $\{-21, 5\}$

3) $\{-1, -15\}$

7) No solution.

11) $\{26, -8\}$

15) $\left\{-10, \frac{52}{5}\right\}$

19) $\left\{7, -\frac{23}{3}\right\}$

4) $\{2, -2\}$

8) $\{8, 0\}$

12) $\{10, -10\}$

16) No solution.

20) No solution.