11/10/10

Simplest notes on absolute value inequalities:

1. Decide if you need to undo any operations to get the absolute value term by itself.

2. To create the positive and negative cases:

   → Look at the constant that is alone on one side of the inequality.
   → If it is positive, you have your positive case, and if it is negative, you have your negative case.
   → Create your missing case by changing the sign of the constant and flipping the inequality.

3. Solve both inequalities using your multi-step skills.

4. Graph each inequality.

5. Write your compound inequality (using and/or).

(11) $5 > |v+2| + 3$
$\underline{-3} \qquad\qquad \underline{-3}$

$2 > |v+2|$

* Subtract 3 from both sides first.

positive case:

$2 > v+2$

$2 > v+2$
$\underline{-2} \quad \underline{-2}$

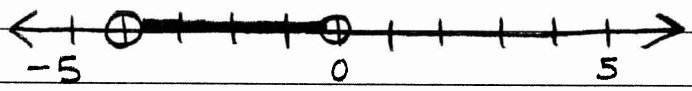
$0 > v$

negative case:

$-2 < v+2$

$-2 < v+2$
$\underline{-2} \quad \underline{-2}$

$-4 < v$



$-4 < v < 0$

(12) $|4y+11| < 7$

positive case:

$4y + 11 < 7$

$4y + 11 < 7$
$-11 \quad -11$

$4y < -4$

$\frac{4y}{4} < \frac{-4}{4}$

$y < -1$

negative case:

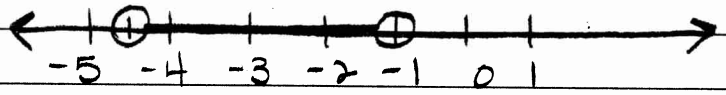
$4y + 11 > -7$

$4y + 11 > -7$
$-11 \quad -11$

$4y > -18$

$\frac{4y}{4} > \frac{-18}{4}$

$y > -4\frac{1}{2}$



$-4\frac{1}{2} < y < -1$

(15) $-2|h-2| > -2$

$\frac{-2|h-2|}{-2} > \frac{-2}{-2}$

$|h-2| < 1$

* Divide by -2 on both sides
* This means you must flip the inequality sign!

positive case:

$h-2 < 1$

$h-2 < 1$
$+2 \quad +2$

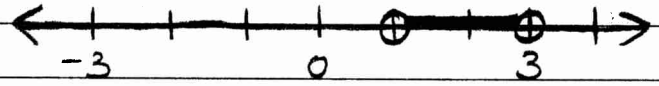
$h < 3$

negative case:

$h-2 > -1$

$h-2 > -1$
$+2 \quad +2$

$h > 1$



$1 < h < 3$