Graphing inequalities on a number line: Solve for the variable first, then graph.

If $>$ or $<$, use an open circle, and if $\geq $ or $\leq $, use a closed (filled-in) circle

If $>$ or $\geq $, shade to the right, and if $<$ or $\leq $, shade to the left

If you multiply or divide by a negative when solving, you must flip the inequality sign

With compound inequalities (2 inequalities on one number line):

AND problems want where BOTH inequalities are true, so shade the overlap

OR problems want all possible solutions, so shade all options

Rules:

Ex. $-4x-3<5$

$-4x<8$ $\rightarrow $ $x>-2$

$5x+1<-9 or -2x\leq -2$ $5x<-10$ $\rightarrow $ $x<-2$ $or$ $ x\geq 1$

$x-4\geq -9 and x-4<-1$ This could also be written this way: $-1>x-4\geq -9$

$x\geq -5 and x<3$

You try:

$3x>-3 and -4x+9>1$ $-x<-4 or x+9\leq 5$

$$-1<x+2\leq 1$$

Graphing an inequality: Graph the line, then shade

Rules:

If $>$ or $<$, use a dashed line, and if $\geq $ or $\leq $, use a solid line

If $>$ or $\geq $, shade above the line, and if $<$ or $\leq $, shade below the line



Ex. $3x-2y<2$

$$-2y<-3x+2$$

$$y>\frac{3}{2}x-1$$



You try:

$4x+y\geq 3$ $x-3y>12$

Graphing a system of inequalities: The solution is where the graph is double shaded.

Ex. $x+2y\geq 6$ $ \rightarrow $

$$2y\geq -1x+6$$

$$y\geq -\frac{1}{2}x+3$$

 $y<5x-3$

Solution

You try:

$5x+y<2$ $3x+2y\geq 6$

$y\leq \frac{3}{2}x$ $x+4y<4$