

Prof. Kincaid - January 11

• Math Lab code - Kincaid 32272

- Section 1.5 -

• #17, #77, #65, #39, #75,

- Inequalities -

• One thing different about equations and inequalities: change the symbol!

ex: $-2x < 4$
 $x > -2$
Divide by -2

#39: If $x < 5$, then $x - 5 < 0$

If we start
with x , then
subtract 5...

$x - 5 < 5 - 5 \Rightarrow x - 5 < 0$

Same on both
sides!

#65: $\frac{1}{2}(x-4) > x+8$

find the LCO
 $\frac{1}{2}x - 2 > x + 8$
 $2 \cdot \frac{1}{2}x - 2 \cdot 2 > 2 \cdot x + 2 \cdot 8$

or... $2(\frac{1}{2}(x-4)) > 2(x+8)$

$x - 4 > 2x + 16$

$x - 4 > 2x + 16$
 $-x \quad -x$

$-4 > x + 16$
 $-16 \quad -16$

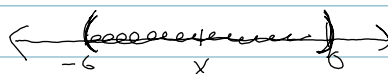
$-20 > x \Rightarrow x < -20$

-20 is greater than x \Rightarrow x is less than -20

$$\begin{array}{c} \boxed{LCD=2} \\ \swarrow \quad \downarrow \quad \searrow \\ x \quad \quad x \quad \quad x \\ \#78 - \quad | < | - \frac{1}{2}x < 4 \\ \quad \quad \downarrow \\ \quad \quad -2 < 2 - x < 8 \\ \quad \quad \downarrow \\ \quad \quad -2 \quad \quad -2 \end{array}$$

$$\begin{array}{c} 0 < -x < 6 \\ x-1 \quad x-1 \quad x-1 \end{array}$$

$$0 > x > -6 \Rightarrow \boxed{-6 < x < 0} \Rightarrow (-6, 0)$$

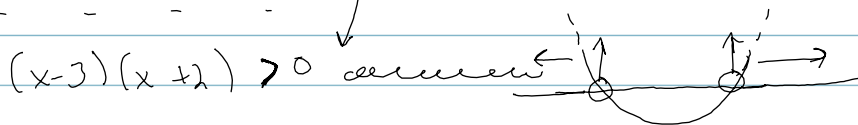
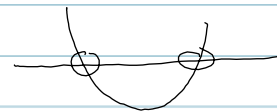


$$\begin{aligned} \#77 = (x+2)(x-3) > (x-1)(x+1) \\ x^2 - 3x + 2x - 6 > x^2 + x - x - 1 \quad \leftarrow \text{FOIL / Distribute} \\ x^2 - x - 6 > x^2 - 1 \\ -x^2 \quad \quad \quad -x^2 \\ -x - 6 > -1 \\ -x > 5 \end{aligned}$$

$$\boxed{x < -5}$$

★ ~~Factor this~~ $x^2 - x - 6 > 0$] Factor this

$$\begin{array}{l} (x-3)(x+2) = 0 \\ x-3=0 \quad x+2=0 \\ x=3 \quad \quad x=-2 \end{array}$$



This is a little trickier! keep an eye out for this later in the semester...

Fun Problem! What does that mean? Reciprocal!

$$0 < (3x+6)^{-1} < \frac{1}{3}$$

$$0 < \frac{1}{3x+6} < \frac{1}{3} \stackrel{?}{=} 0 < 1 < \frac{1}{3}(3x+6) = 1 < x+2$$

Will this work?

$$1 < x+2 = -1 < x$$

Try it at home!