Math 115E Activity 12

Chapter 4 Section 5
Determining the Linear Function

Definition. *A linear function can be expressed by $f(x) = mx+b$, where x is the input, m is the slope, and b is the y intercept of $f(x)$. This is known as slope-intercept form*

Helpful steps. *There are two slightly different methods to find the linear function*

- *Use point-slope form $(y - y_0) = m(x - x_0)$: Plug in a point (x_0, y_0) and m*
- *Use slope-intercept form $y = mx + b$: Plug in a point (x, y) then solve for b*

Section 1: Find the linear function

#1 $(-1, 1)$ and $(3, 6)$

#2 $(-1, 1)$ and $(3, 1)$

#3 $(0, 0)$ and $(2, -2)$

#4 $(4, 5)$ and $(-10, -4)$

#5 $(0, 12)$ and $(7, 0)$

#6 $(-4, -5)$ and $(6, 2)$

#7 $(2, 10)$ and $(-4, -8)$

#8 $(5, 5)$ and $(5, -1)$

#9 $(-20, 30)$ and $(-40, 90)$

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Definition. *An inequality looks just like an equation, except that in place of the equal sign, we have one of the symbols* $<, >, \leq, \geq$. *Giving us a range of values not just one Example:* $4x - 3 = 1 \rightarrow x = 1$ *compared to* $4x - 3 \geq 1 \rightarrow x \geq 1$

Helpful steps. *There are two slightly different methods to find the linear function*

- *To solve: Isolate* x *terms to one side, then simplify both sides*
- *If you divide both sides by a negitive number, then switch the inequality signs Example: We start with leq and becomes* $\geq$ *and then* $>$ *becomes* $<$ *and vise versa*

Section 2: Solve the Expressions

#1 $2x + 3 = 5$

#2 $4x - 3 \geq 9$

#3 $5x - 1 < x + 8$

#4 $\frac{5}{6}x - 12 = 4$

#5 $4(x - 5) + 2 \geq 2 + 2x$

#6 $4 - \frac{4}{5}x = 4$

#7 $\frac{3}{2}x - 6 \leq \frac{4}{5} + 8$

#8 $-(-x - 4) = \frac{1}{2}(x - 2)$

#9 $\frac{4}{3}x - \frac{1}{5} = \frac{5}{6}x$

#10 $5x + 1 = 5x - x + 1$

#11 $6x - 4 < 6x - 5$

#12 $5x - 2 > 5x - 2$