Graphing Linear Functions

Terminology

What is a Linear Function? A function whose graph is that of a line.

Standard Form
$ax+by=c$
a,b,c are integers and a is a positive

Slope-intercept form
$y=mx+b$
m is the slope of the line
b is the y-coordinate of the y-intercept

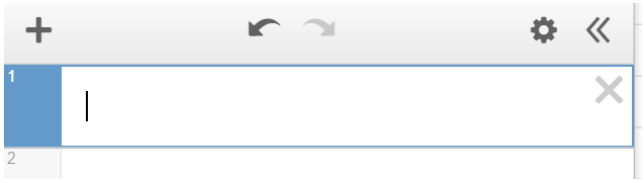
Intercepts: Where the graph crosses an axis

y-intercept: graph crosses y-axis and $x=0$

x-intercept: graph crosses the x-axis and $y=0$

Zeros: x-coordinate of an x-intercept

Graphing using Desmos:
Type the equation in the box exactly as it is written



Graphing Linear Inequalities

1. Use Desmos. Type the equation in exactly as it is written
2. By hand:
   Solid $(\leq,\geq)$ or dotted $(>,<)$
   Shade above $(>,\geq)$ or below $(<,\leq)$

Identify the x-intercept and y-intercept of the relation: $3x-2y=12$

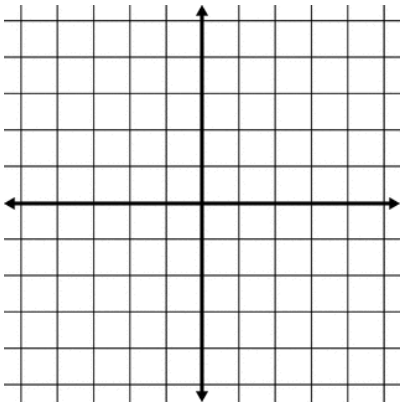
x-intercept y-intercept

What is the zero of the function below?

$f(x)=\frac{3}{2}x-9$

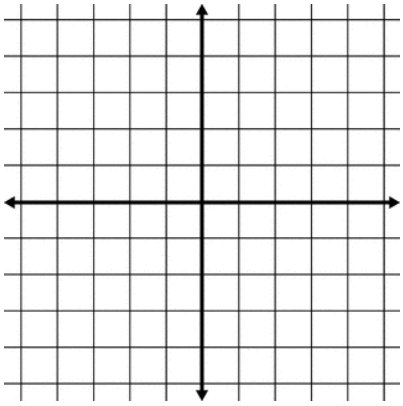
Sketch the graph of the linear function below:

$3y=2x-6$



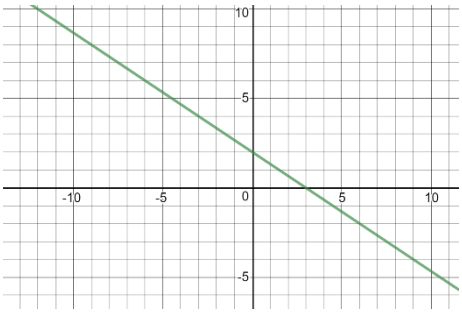
Sketch the graph of the linear function:

$g(x)=-\frac{3}{2}x+2$



Graphing Linear Functions

Let $f(x)=x$. The graph of $g(x)$ is shown. The slope of $g(x)$ is _____ the slope of $f(x)$ and the graph is shifted _____ from $f(x)$.

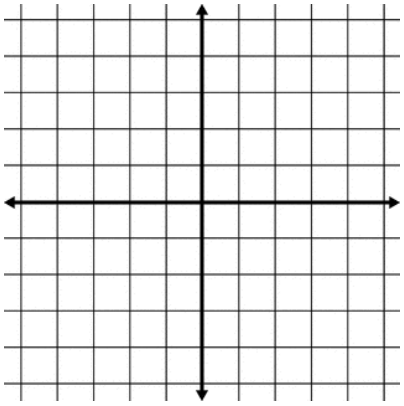


Let $f(x)=x$ and $g(x)=-3x-4$, complete the statements to compare the graph of $g(x)$ to the graph of $f(x)$.

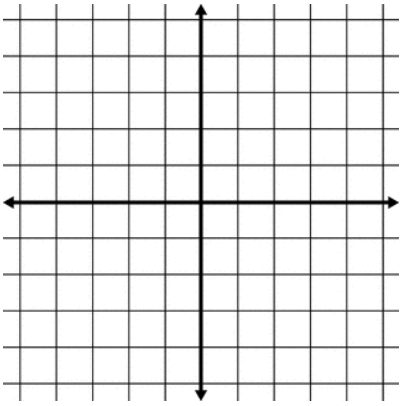
The graph of $g(x)$ is shifted up/down from the graph of $f(x)$.

The graph of $g(x)$ is steeper/less steep than the graph of $f(x)$.

Let $f(x)=x$ and $g(x)$ is up 4 units and $\frac{1}{2}$ as steep as $f(x)$, graph two points that are on $g(x)$.

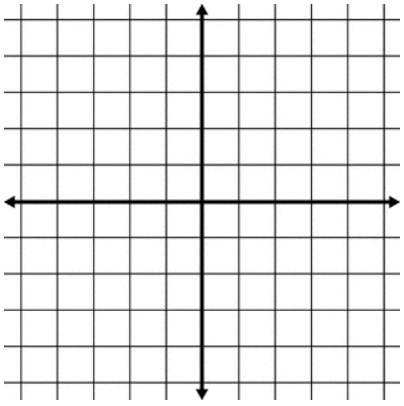


Graph the line that is perpendicular to $y=\frac{2}{3}x-2$ and contains the point $(-4,1)$.



Graph the following inequality:

$y<\frac{2}{3}x-2$



Graph the following inequality:

$y\geq -2x+2$