Name _____ COVID-19

Alg2 Graphing Functions

When we did our graphing during class, all our graphs were LINEAR EQUATIONS (y= mx + b).

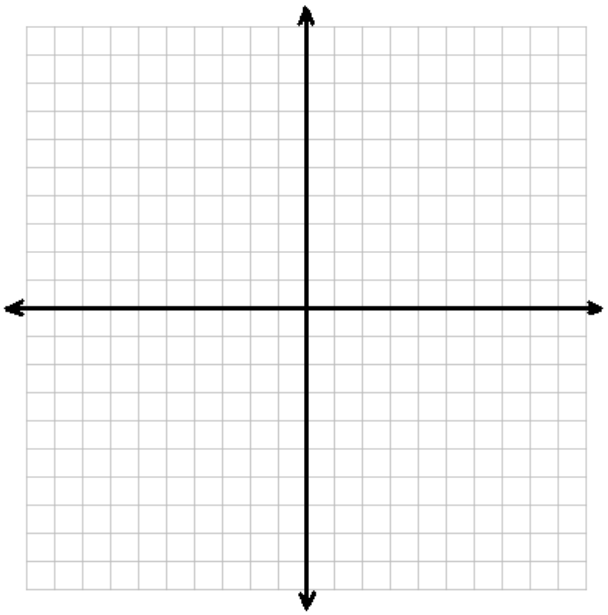
Since they were linear equations, they had a slope (m) that did not change. We were able to write the y-intercept and use the slope to count boxes and plot points.

For instance:

Graph y = -3x + 7

m = $\frac{-3}{1}$ = $\frac{\Delta y}{\Delta x}$ = $\frac{down\ 3}{right\ 1}$

y-int: (0,7)



Now that we have to graph functions (or equations) that are non-linear, we can't just count boxes because non-linear functions do not have constant slopes. So we will have to use a table of values. Before you panic and say, "How am I going to do that?" or "Now I have to do all the computations to figure out the points!!!"… take a breath. Your calculators will give you the table if you use the **y =** button and 2nd Table. So all you have to do is:

1) Enter the equation into the y = screen [f(x)
2) Copy the table (pick all the points that fit from -10 to +10)
3) Plot the points.
4) Try your best to make a nice smooth curve to connect the dots.

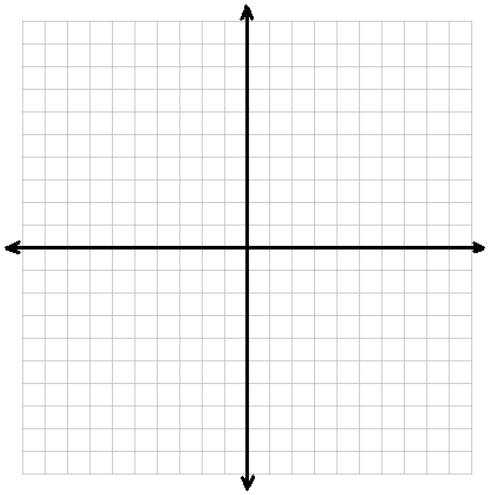
Use the examples on the next page:

Name _____ COVID-19

Alg2 Graphing Functions

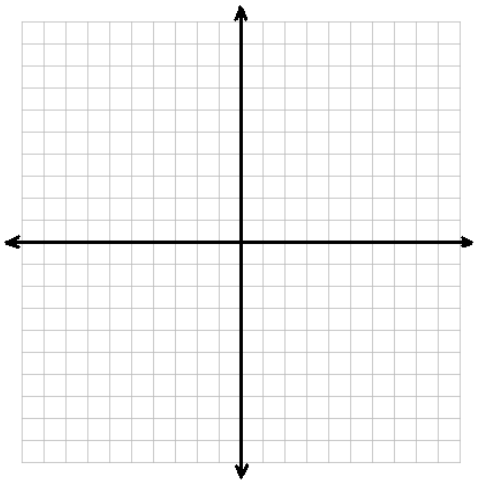
Quadratic Equation (x^2):

$f(x) = x^2 - 2x - 8$



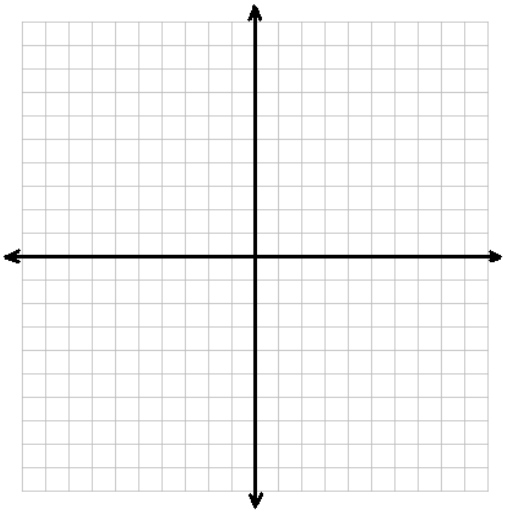
Absolute Value Function [|x|]

$f(x) = | 2x - 6 |$



Exponential Function (variable is in the exponent 4^x)

$f(x) = 2^x - 8$



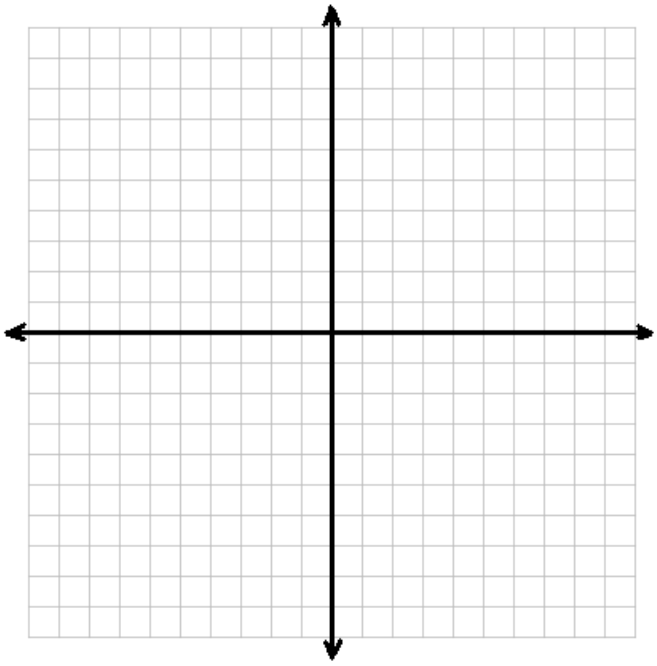
Name _____ COVID-19

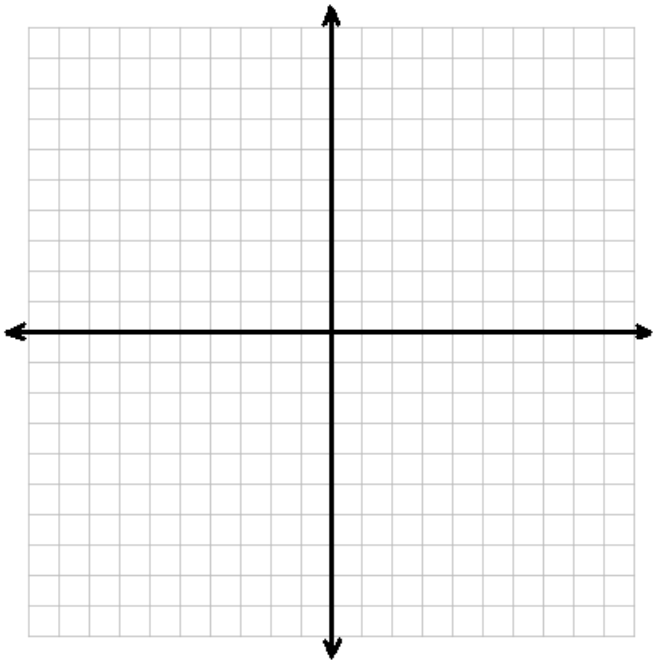
Alg2 Graphing Functions

Graph each function:

1) $y = x^2$

2) $y = -x^2$





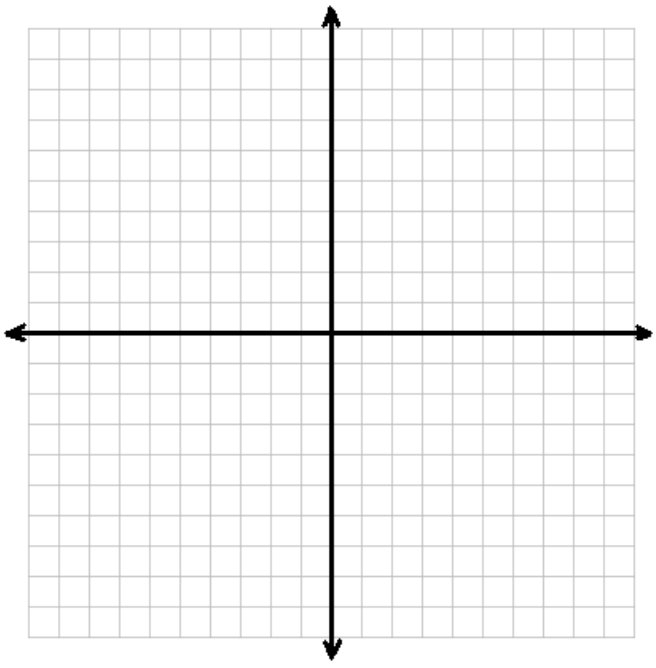
Name _____ COVID-19

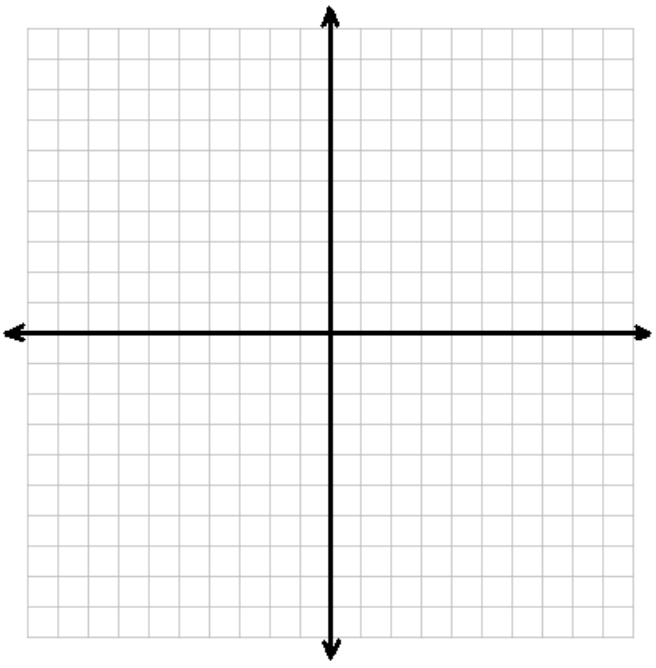
Alg2 Graphing Functions

3) $y = x^2 + 1$ 4) $y = x^2 - 5$

Describe how the graph shifted from the original ($y = x^2$):

_____ _____

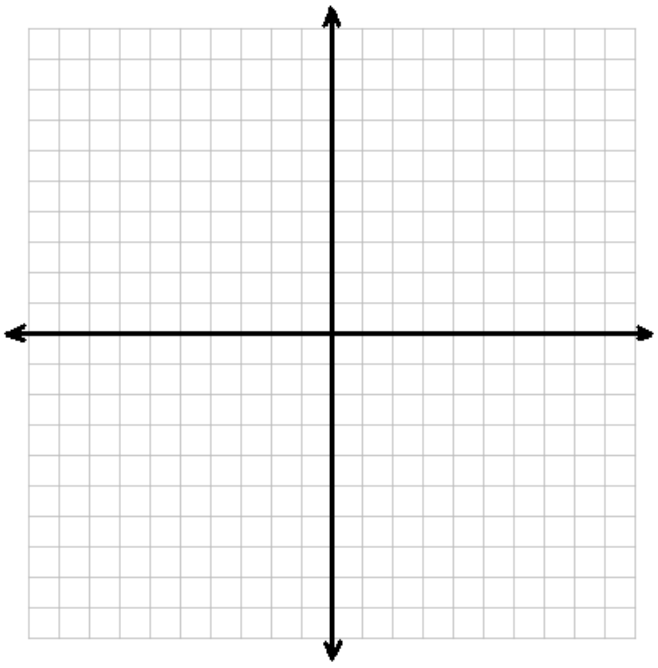


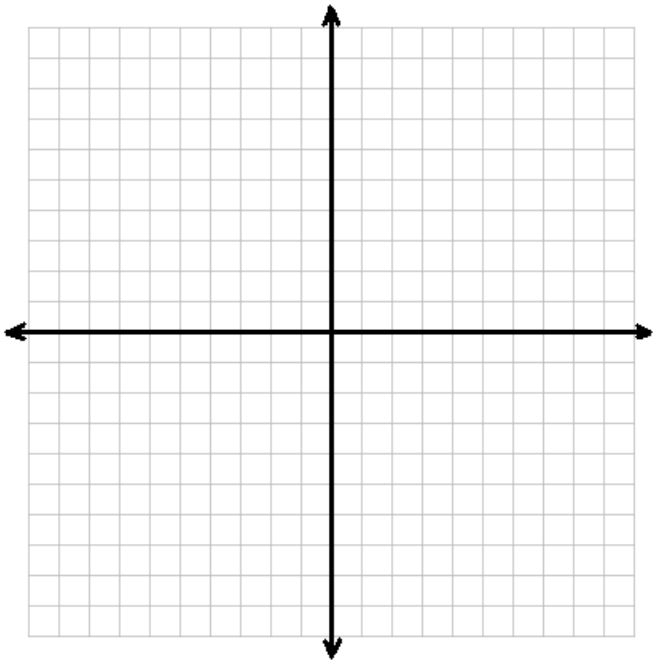


5) $y = (x+3)^2$ 6) $y = (x - 2)^2$

Describe how the graph shifted from the original ($y = x^2$):

_____ _____



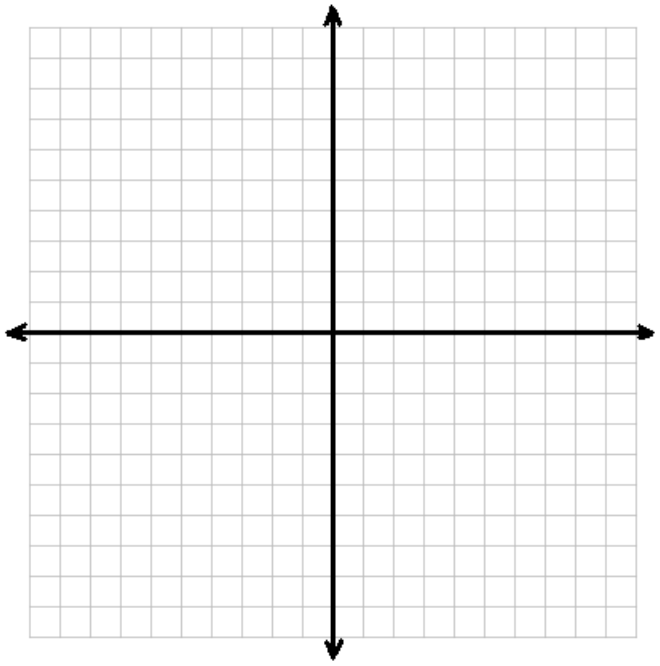


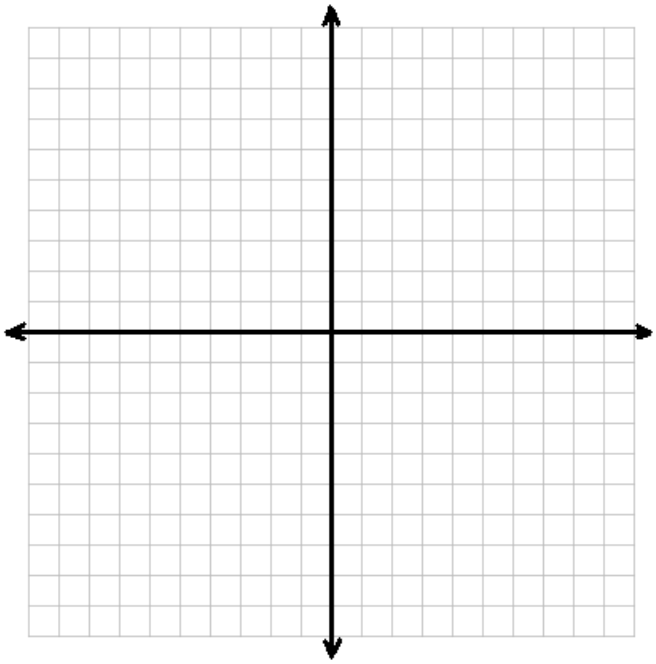
Name _____ COVID-19

Alg2 Graphing Functions

7) Graph y = |x|

8) y = -|x|





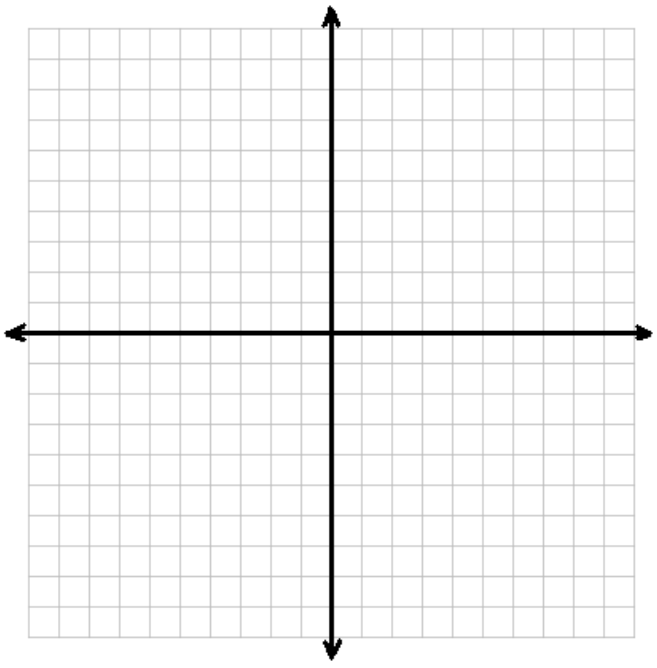
Name _____ COVID-19
Alg2 Graphing Functions

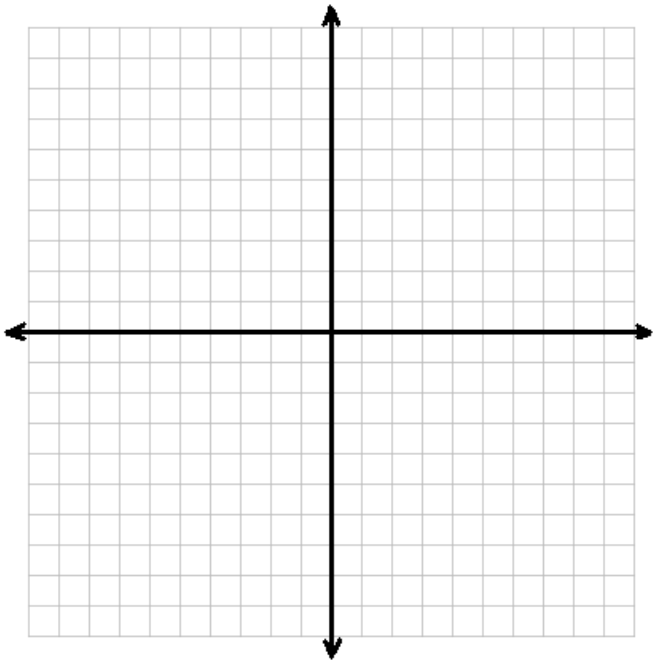
9) $y = |x| - 4$

10) $y = |x| + 5$

Describe how the graph shifted from the original ($y = |x|$):

_____ _____



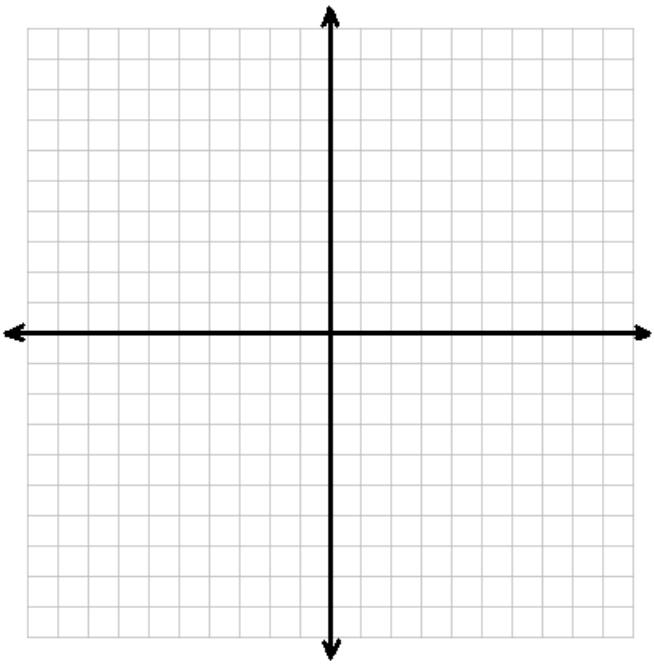


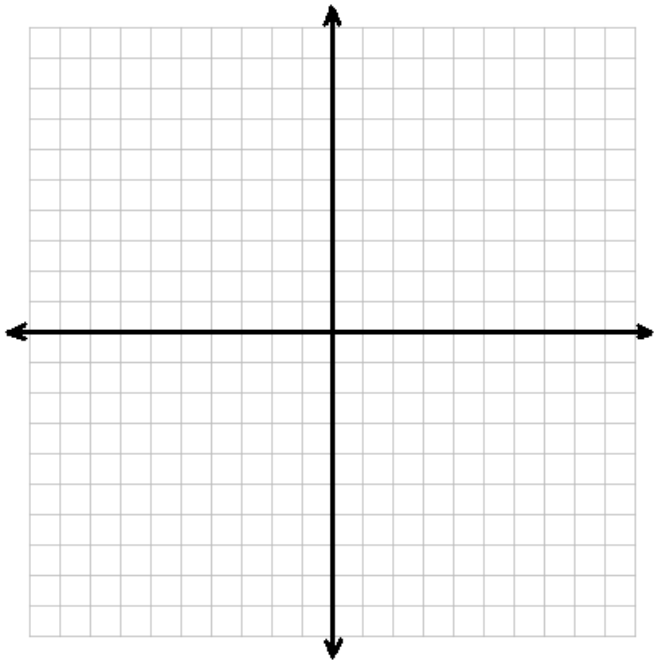
11) $y = |x - 5|$

12) $y = |x + 4|$

Describe how the graph shifted from the original ($y = |x|$):

_____ _____





Name _____ COVID-19

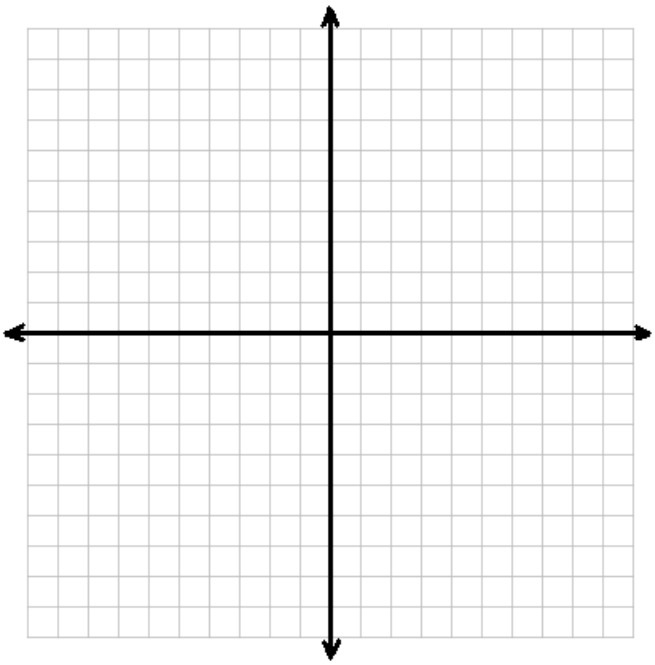
Alg2 Graphing Functions

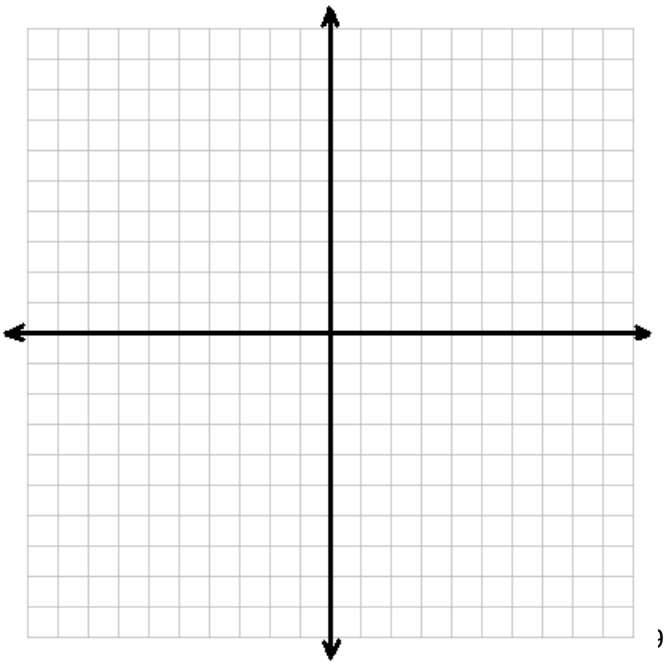
13) $y = |2x|$

14) $y = |x - 5| - 4$

Describe how the graph shifted from the original ($y = |x|$):

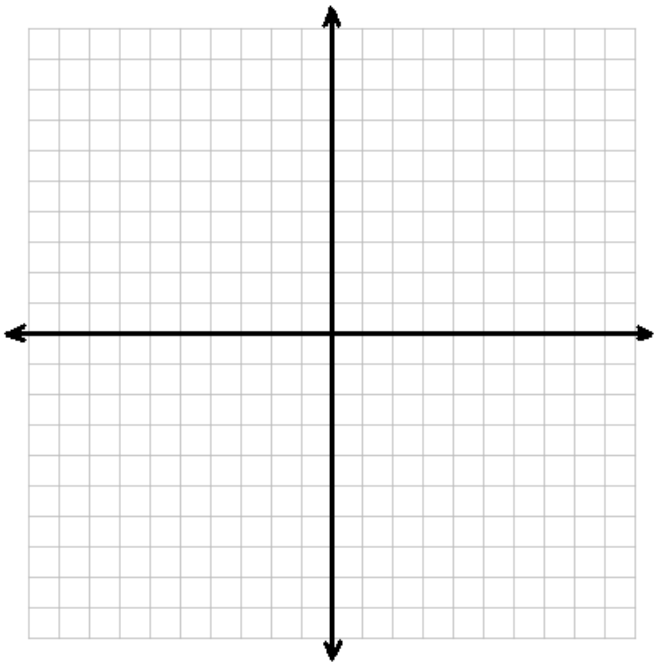
_____ _____

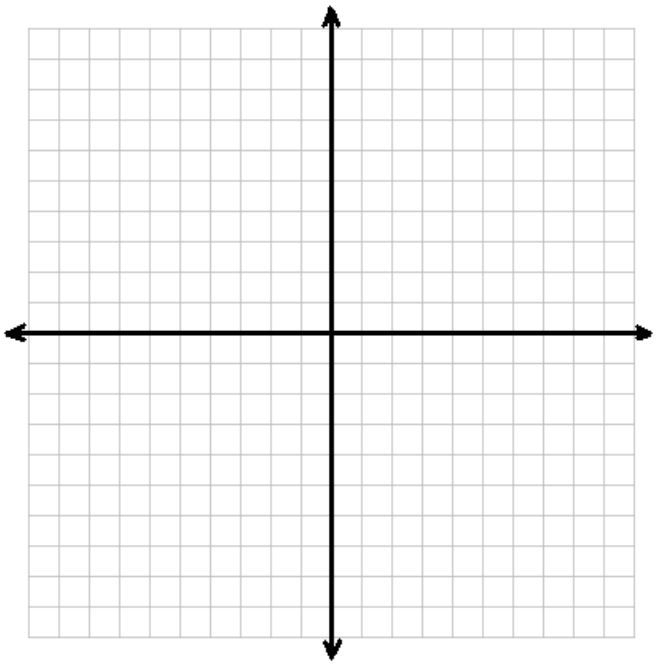




15) Graph $y = 2^x$

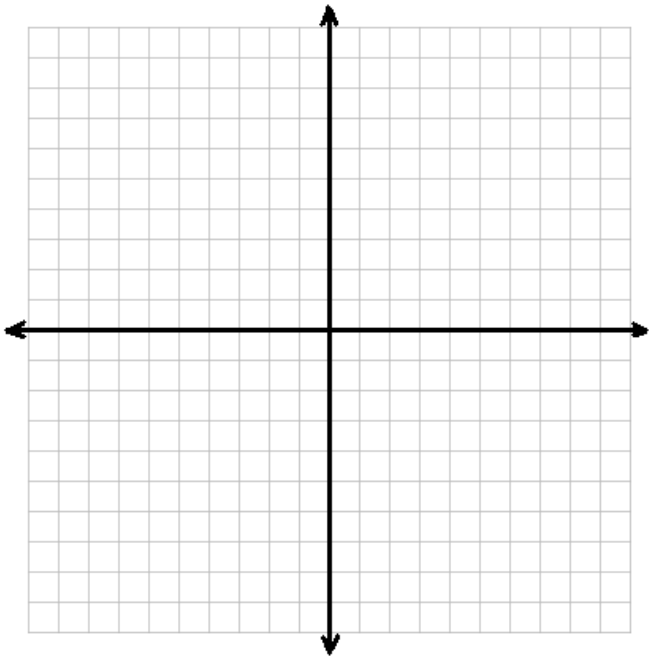
16) graph $y = (\frac{1}{2})^x$

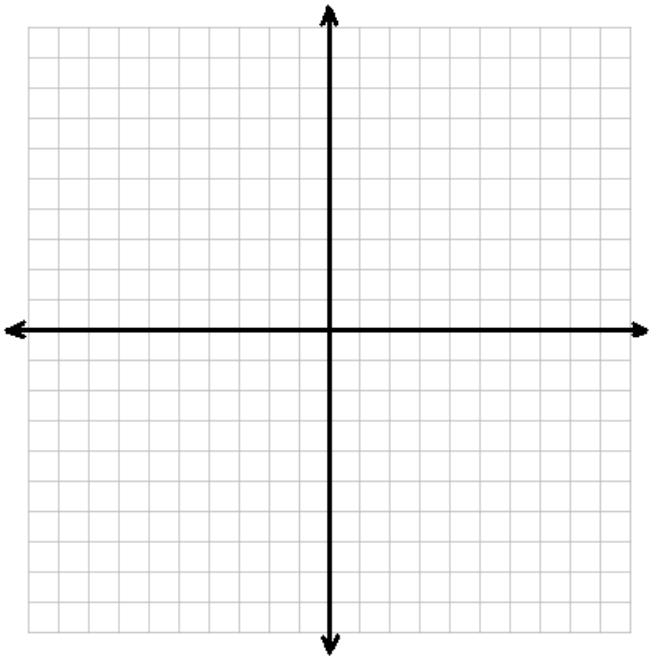




17) $f(x) = -|\frac{1}{2}x + 4| + 5$

18) $f(x) = 3^x$

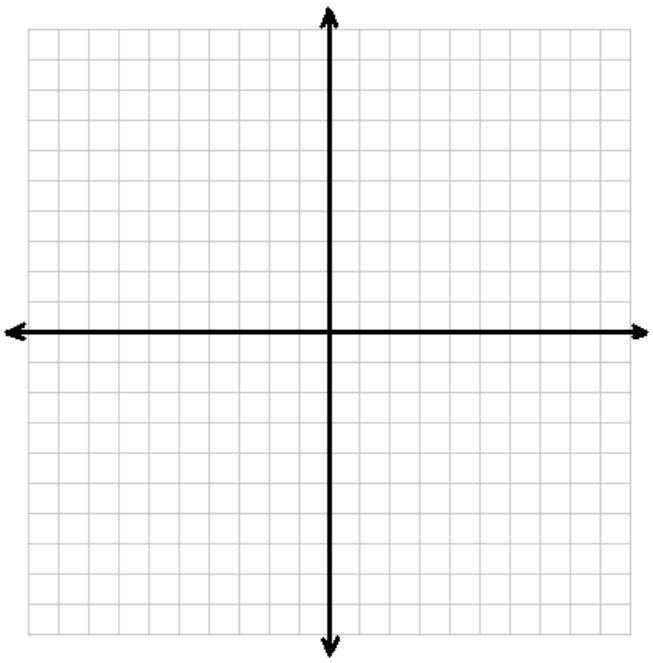


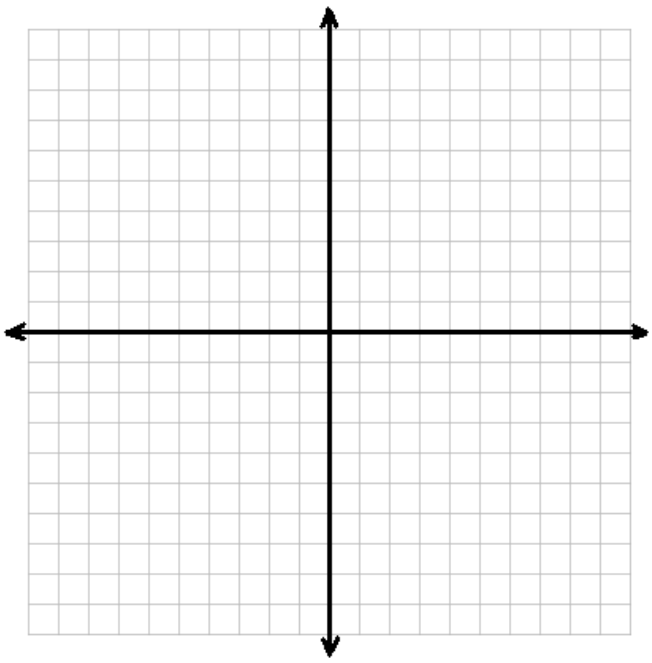


Graph each function:

19) $f(x) = (\frac{1}{3})^x$

20) $f(x) = 3^x - 5$

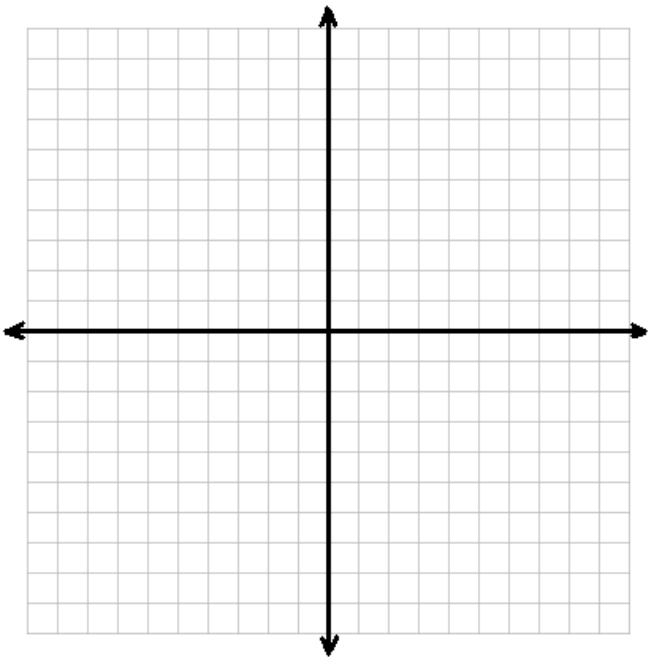


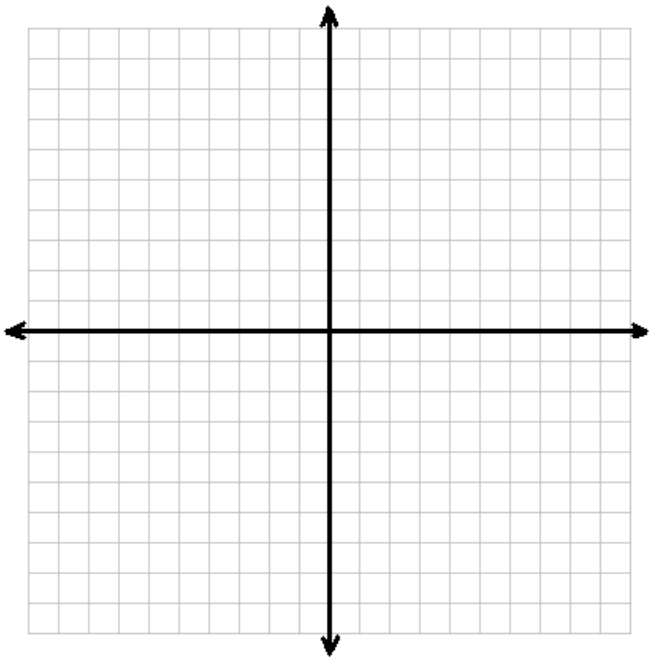


Graph each function:

21) $f(x) = (x+2)^2 + 1$

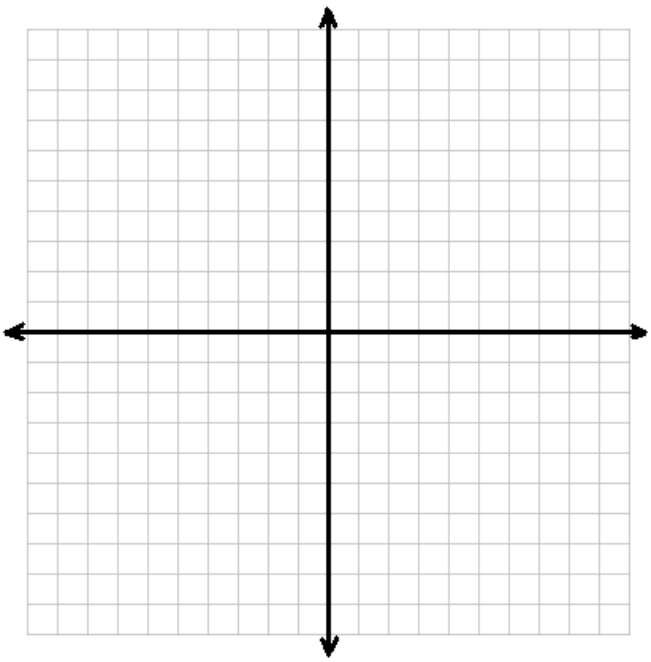
22) $f(x) = (x - 1)^2 - 6$

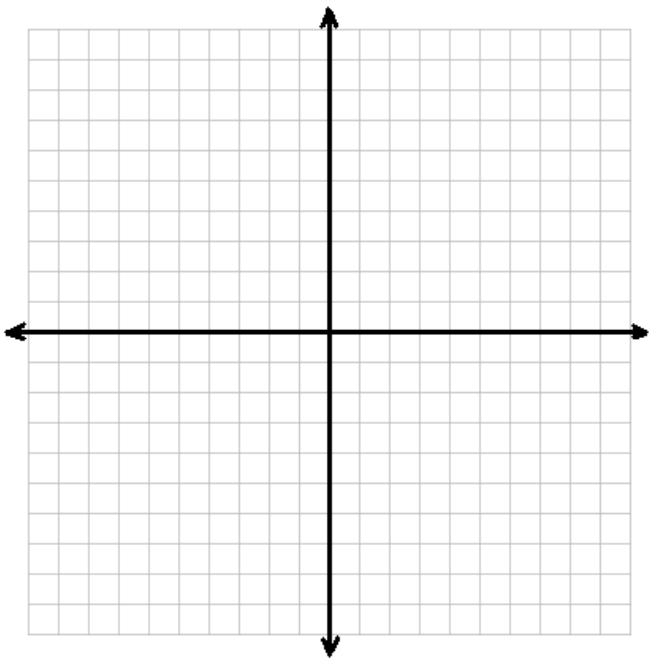




23) $f(x) = -x^2 + 2x + 8$

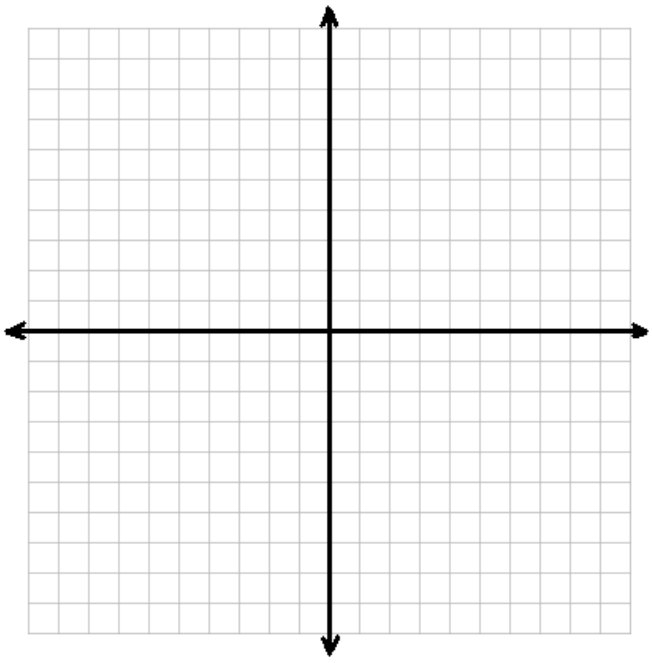
24) $f(x) = -x^2 - 2x + 8$

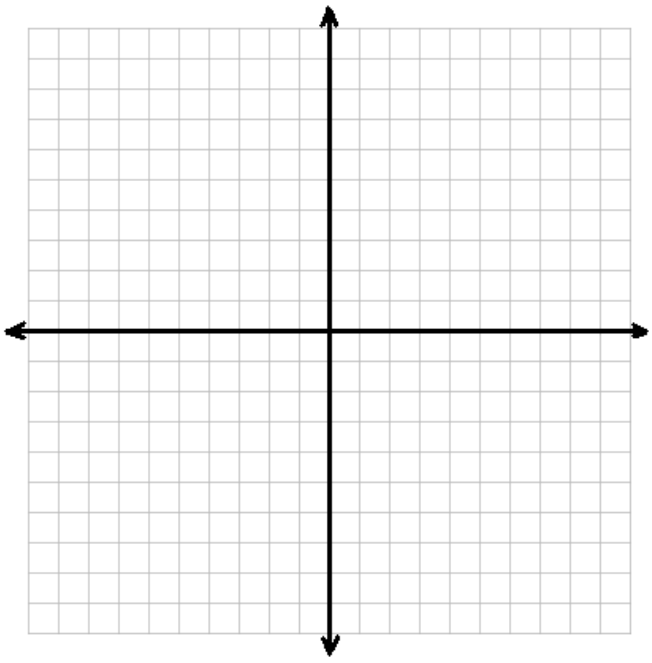




25) $f(x) = -|3x + 6| + 7$

26) $f(x) = 2^x - 6$





27) f(x) = |2x – 2| - 3

28) f(x) = |2x + 2| - 3