Warm Up: Simplify.

$\left(\frac{2}{3}\right)^{-2}$

$\left(\frac{3}{2}\right)^{2}$

$\frac{9}{4}$

$\frac{x^{-3}}{x^{4}} = \frac{1}{x^{3}} \cdot \frac{1}{x^{4}}$

x^{-3-4}

$x^{-7} = \frac{1}{x^{7}}$

$(4)^{-2} = \left(\frac{1}{4}\right)^{2} = \frac{1}{16}$

$\left(\frac{1}{5}\right)^{-3}$

5^{3}

125

6. $\left(\frac{4}{3}\right)^{-3}$

6. $\left(\frac{3}{4}\right)^{3}$

$\frac{27}{64}$

Example #1: Graph $f(x) = 2^{x}$

x	f(x)
0	1
1	2
2	4
3	8
4	16

×2 ×2 ×2

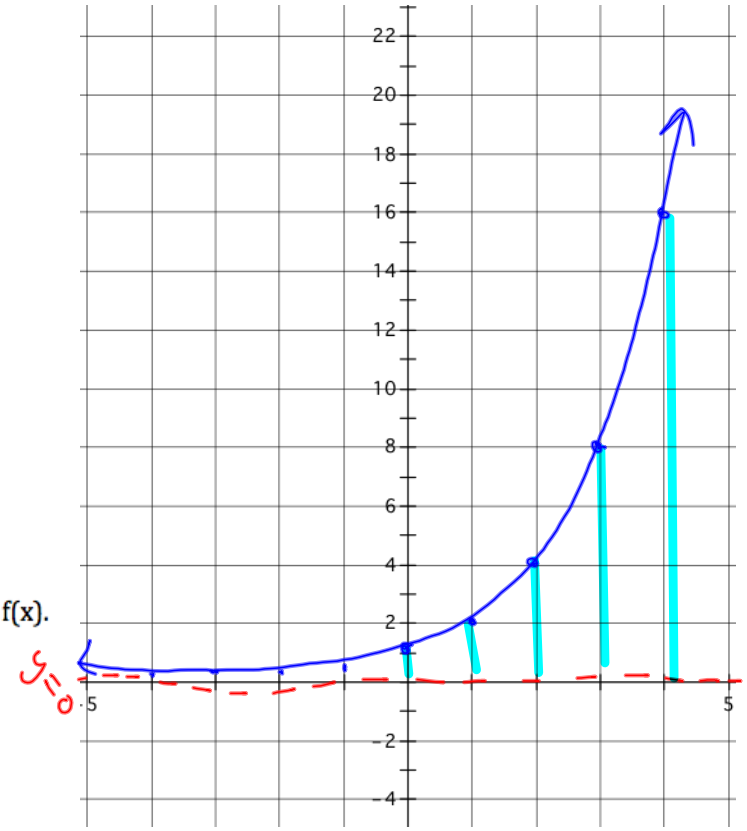
D: $(-\infty, \infty)$

R: $(0, \infty)$

State the domain and range of f(x).

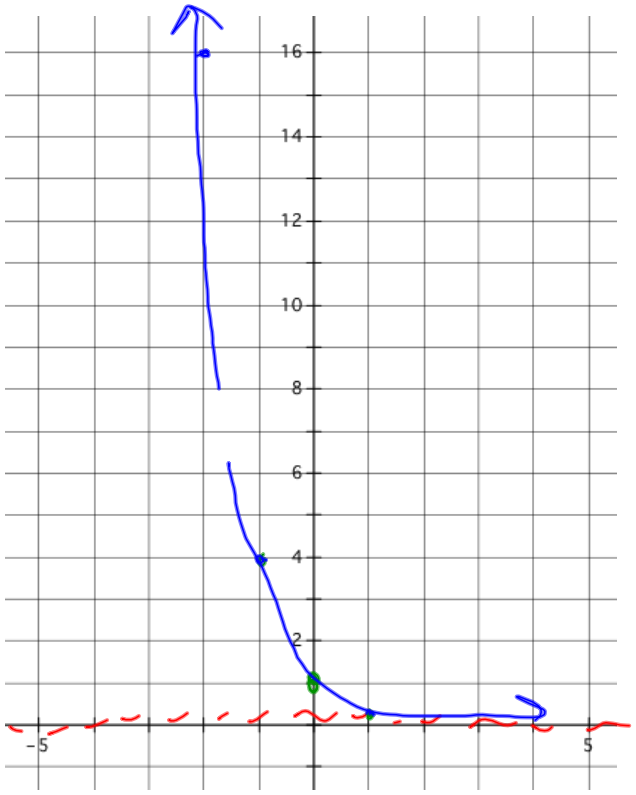
D: all Real #

R: Pos. Real #



EX #2: Graph $g(x)=\left(\frac{1}{4}\right)^x$

$b=\frac{1}{4}$

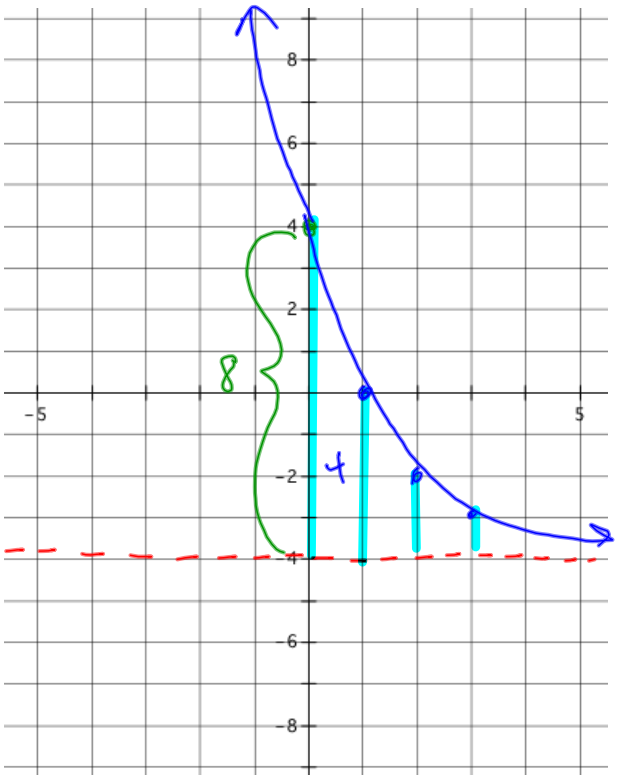


EX #3: Graph $p(x)=8\left(\frac{1}{2}\right)^x-4$

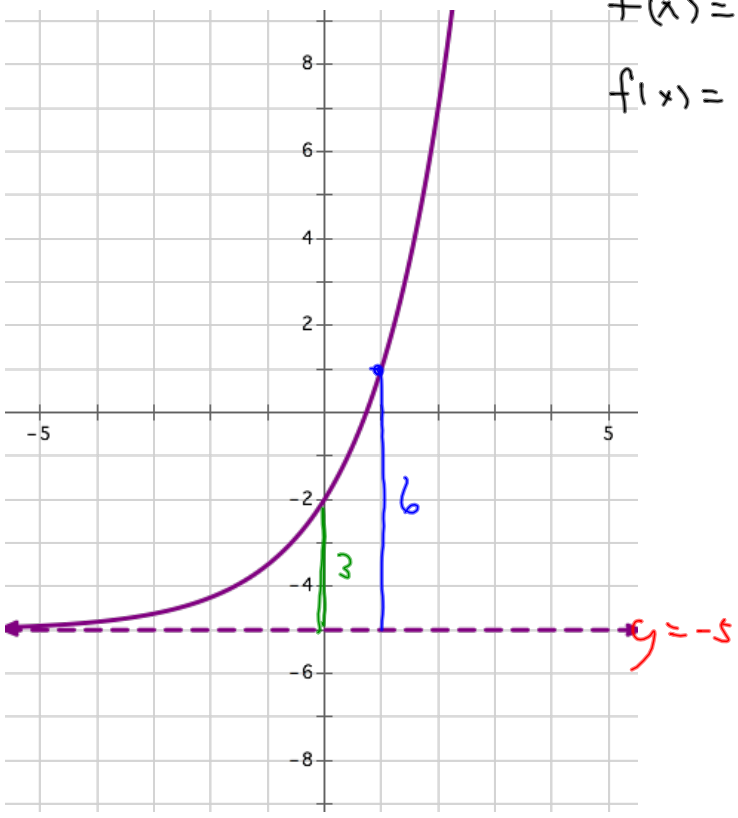
-4 = Asymptote $y=-4$

8 = initial value

$\frac{1}{2}$ = multiplier.



EX #4: Write an equation for the exponential function.

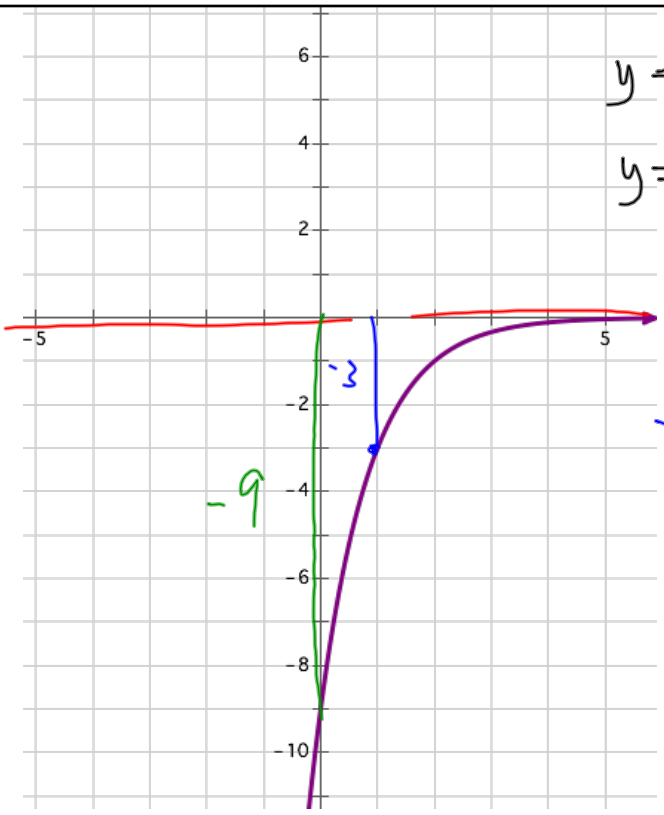


$f(x) = a(b)^x + c$

$f(x) = 3(2)^x + -5$

$3 \cdot b = 6$

$b = \frac{6}{3} = 2$

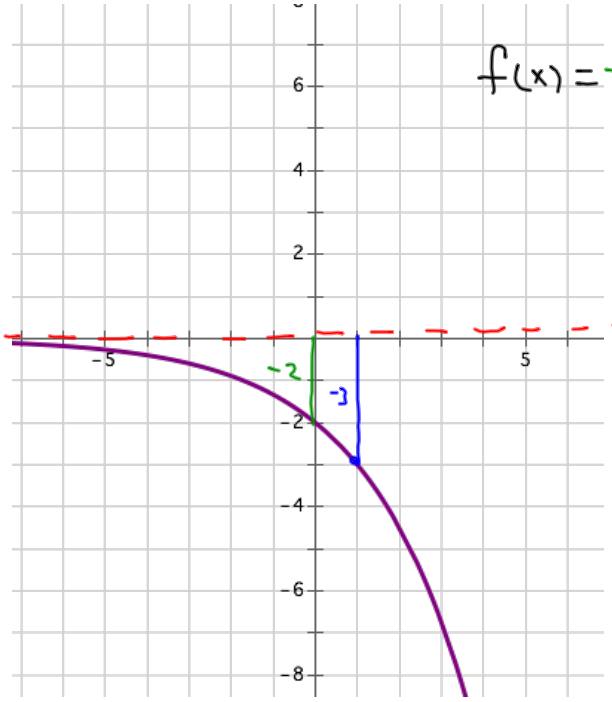


$y = a(b)^x + c$

$y = -9\left(\frac{1}{3}\right)^x + 0$

$-9 \cdot b = -3$

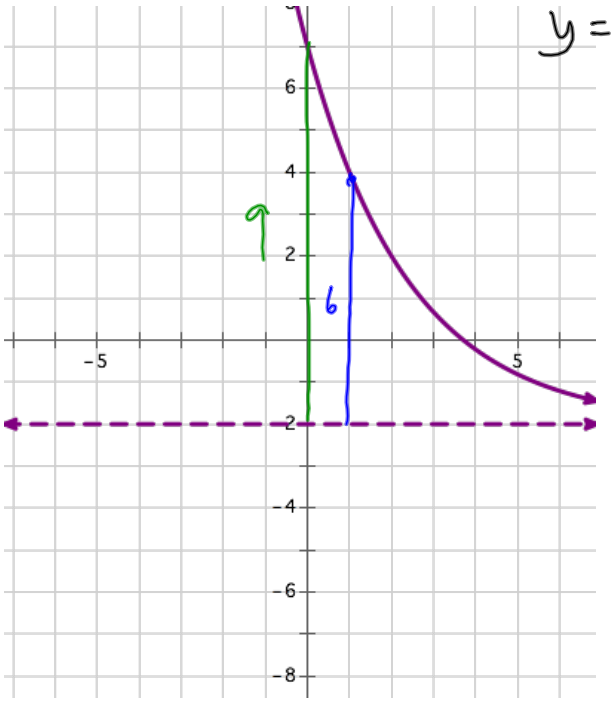
$b = \frac{-3}{-9} = \frac{1}{3}$



$f(x) = -2\left(\frac{3}{2}\right)^x + 0$

$-2\ b = -3$

$b = \frac{-3}{-2} = \frac{3}{2} = 1.5$



$y = 9\left(\frac{2}{3}\right)^x + -2$

$9 \cdot b = 6$

$b = \frac{6}{9} = \frac{2}{3}$