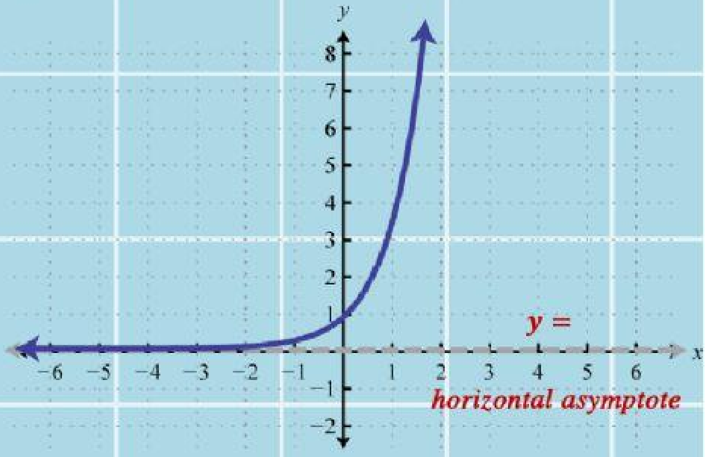
Name: ______________________________ No. ____ M.4/___

Exponential Functions

1. $y = 4^x$

x	$y = 4^x$	Solutions
-3	$4^{-3} = \frac{1}{4^3} = \frac{1}{\ } =$	(-3,)
-2	$4^{-2} = \frac{1}{4^2} = \frac{1}{\ } =$	(-2,)
-1	$4^{-1} = \frac{1}{4^1} = \frac{1}{\ } =$	(-1,)
0	$4^0 =$	(0,)
1	$4^1 =$	(1,)
2	$4^2 =$	(2,)
3	$4^3 =$	(3,)



The horizontal asymptote is y=

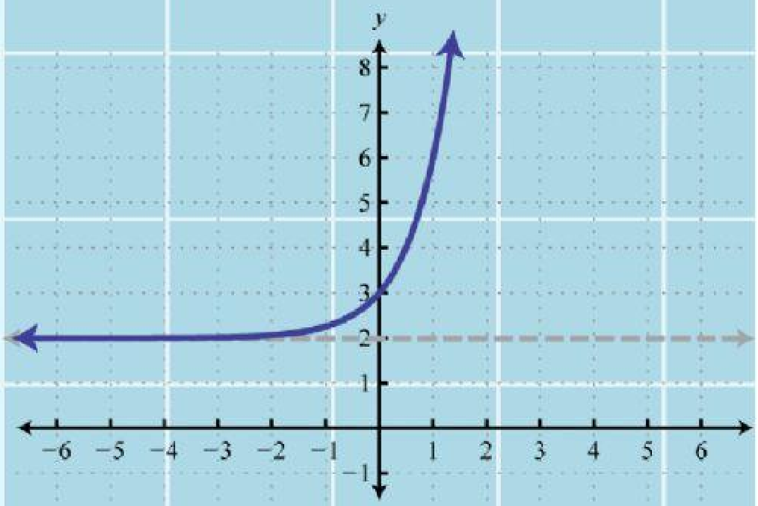
$(-\infty,\infty)$ $(0,\infty)$

Domain:

Range:

2. $f(x) = 4^x + 2$

x	$y = 4^x + 2$	Solutions
-3	$4^{-3} = \frac{1}{4^3} = \frac{1}{\quad} = 0.015625 + 2$	(-3, 2.015625)
-2	$4^{-2} = \frac{1}{4^2} = \frac{1}{\quad} = \qquad +2$	( )
-1	$4^{-1} = \frac{1}{4^1} = \frac{1}{\quad} =$	( )
0	$4^0 = \quad +2$	( )
1	$4^1 =$	( )
2	$4^2 =$	( )
3	$4^3 =$	( )



The horizontal asymptote is y=

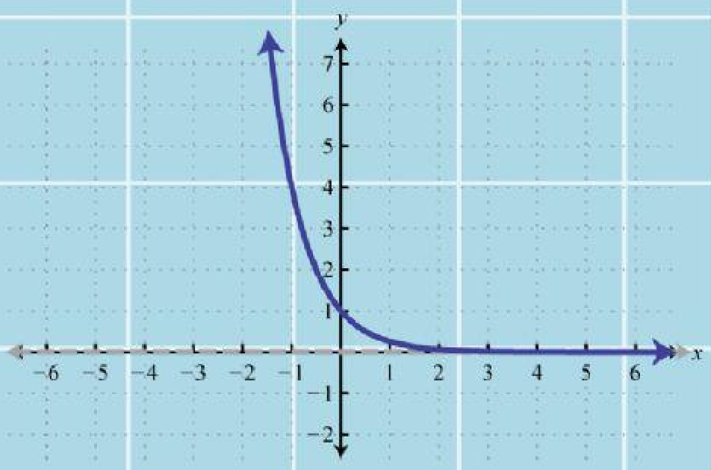
Domain:
Range:

$(-\infty,\infty)$ $(2,\infty)$

3. $f(x) = (\frac{1}{4})^x$

x	$y = (\frac{1}{4})^x$	***Solutions***
-3	$(\frac{1}{4})^{-3} = \frac{1}{(\frac{1}{4})^3} = \frac{1}{\frac{1}{\ }} = \frac{1}{1} \times \frac{\ }{1} =$	**(-3,)**
-2	$(\frac{1}{4})^{-2} = \frac{1}{(\frac{1}{4})^2} = \frac{1}{\frac{1}{\ }} = \frac{1}{1} \times \frac{\ }{1} =$	**(-2,)**
-1	$(\frac{1}{4})^{-1} = \frac{1}{(\frac{1}{4})^1} = \frac{1}{\frac{1}{\ }} = \frac{1}{1} \times \frac{\ }{1} =$	**(-1,)**
0	$(\frac{1}{4})^0 =$	**(0,)**
1	$(\frac{1}{4})^1 = \frac{1}{\ } = 0.25$	**(1, 0.25)**
2	$(\frac{1}{4})^2 = \frac{1}{\ } =$	**(2,)**
3	$(\frac{1}{4})^3 = \frac{1}{\ } =$	**(3,)**

$(-\infty, \infty)$ $(0, \infty)$

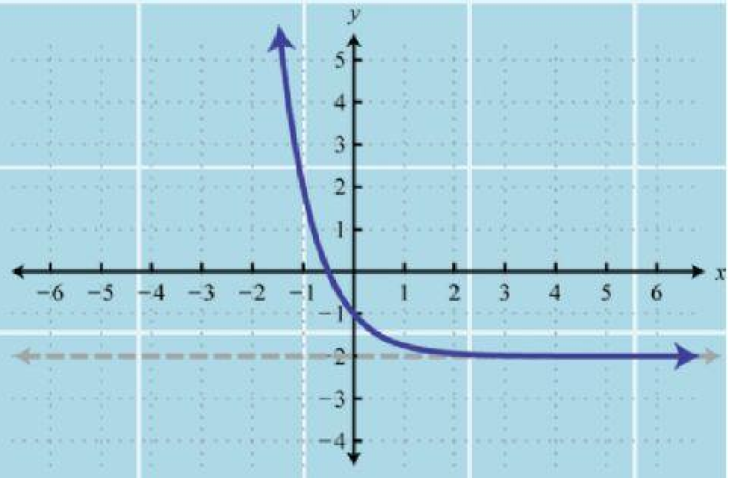


The horizontal asymptote is y=

Domain:
Range:

4. $f(x) = (\frac{1}{4})^x - 2$

x	$y = (\frac{1}{4})^x - 2$	Solutions
-3	$(\frac{1}{4})^{-3} = \frac{1}{(\frac{1}{4})^3} = \frac{1}{\underline{1}} = \frac{1}{1} \times \frac{}{1} = \quad -2 =$	(-3,)
-2	$(\frac{1}{4})^{-2} = \frac{1}{(\frac{1}{4})^2} = \frac{1}{\underline{1}} = \frac{1}{1} \times \frac{}{1} = \quad -2$	(,)
-1	$(\frac{1}{4})^{-1} = \frac{1}{(\frac{1}{4})^1} = \frac{1}{\underline{1}} = \frac{1}{1} \times \frac{}{1} = \quad -2$	(,)
0	$(\frac{1}{4})^0 = \quad -2 =$	(,)
1	$(\frac{1}{4})^1 = \frac{1}{} = \quad -2 =$	(,)
2	$(\frac{1}{4})^2 = \frac{1}{} = 0.0625 - 2 =$	(2,)
3	$(\frac{1}{4})^3 = \frac{1}{} = 0.015625 - 2 = -1.984375$	(3, -1.984375)



The horizontal asymptote is y=

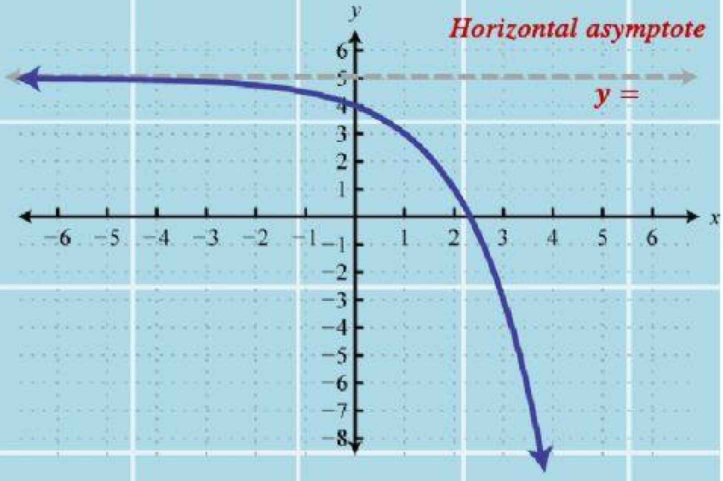
Domain:
Range:

$(-\infty,\infty)$ $(-2,\infty)$

5. $y = 5 - 2^x$

x	$y = 5 - 2^x$	Solutions
-3	$5 - 2^{-3} = 5 - \frac{1}{2^3} = 5 - \frac{1}{}$ $= 5 - 0.125 = 4.875$	(-3, 4.875)
-2	$5 - 2^{-2} = 5 - \frac{1}{2^2} = 5 - \frac{1}{}$ $= 5 - \quad =$	(-2,)
-1	$5 - 2^{-1} = 5 - \frac{1}{2^1} = 5 - \frac{1}{}$ $= 5 - \quad =$	(-1,)
0	$5 - 2^0 = 5 - \quad =$	(0,)
1	$5 - 2^1 = 5 - \quad =$	(1,)
2	$5 - 2^2 = 5 - \quad =$	(2,)
3	$5 - 2^3 = 5 - \quad =$	(3,)

$(-\infty, 5)$ $(-\infty, \infty)$



The horizontal asymptote is y=

Domain:
Range: