

Graph the following.

1.  $y = \frac{1}{2}x + 4 - 5$

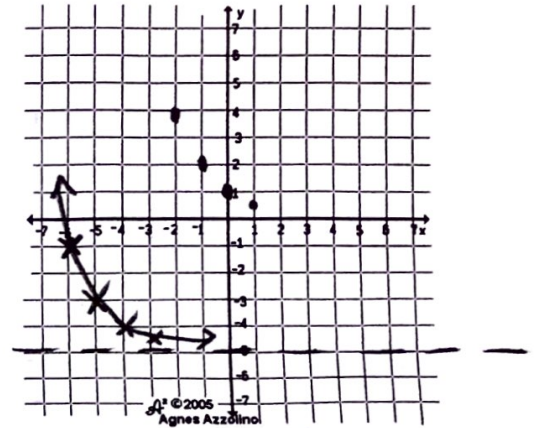
parent  $y = \frac{1}{2}x$   
Left 4 / Down 5

Asymptote:  $y = -5$

Domain:  $\{x | x \in \mathbb{R}\}$

Range:  $\{y | y > -5\}$

End Behavior:  
 $x \rightarrow +\infty \rightarrow -5$   
 $x \rightarrow -\infty \rightarrow \infty$



2.  $y = -2(2)^{x-1} + 3$

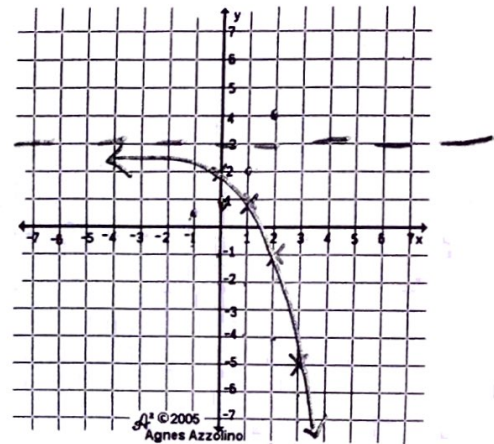
$y = 2^x$  reflect over x-axis  
vert. stretch by 2  
right 1  
up 3

Asymptote:  $y = 3$

Domain:  $\{x | x \in \mathbb{R}\}$

Range:  $\{y | y < 3\}$

End Behavior:  
 $x \rightarrow +\infty \rightarrow -\infty$   
 $x \rightarrow -\infty \rightarrow 3$



3.  $y = \left(\frac{1}{3}\right)^{-x-5} - 7$

$\left(\frac{1}{3}\right)^{-1(x+5)} - 7$

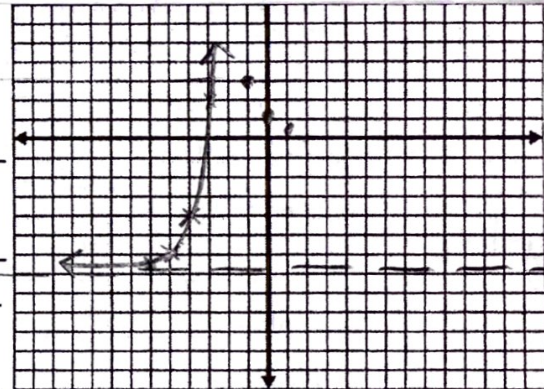
parent  $y = \left(\frac{1}{3}\right)^x$  reflect over y  
left 5  
down 7

Asymptote:  $y = -7$

Domain:  $\{x | x \in \mathbb{R}\}$

Range:  $\{y | y > -7\}$

End Behavior:  
 $x \rightarrow +\infty \rightarrow \infty$   
 $x \rightarrow -\infty \rightarrow -7$



4.  $y = \frac{1}{4} \left(\frac{1}{2}\right)^{2x-6} + 1$

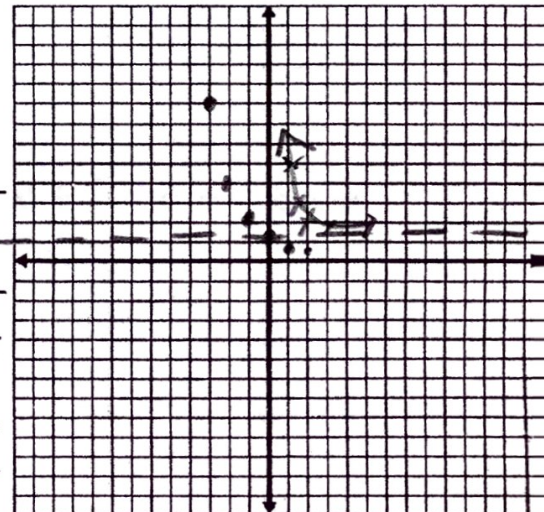
parent  $y = \left(\frac{1}{2}\right)^x$  vert. comp. 1/4  
horz. comp. 1/2  
right 3  
up 1

Asymptote:  $y = 1$

Domain:  $\{x | x \in \mathbb{R}\}$

Range:  $\{y | y > 1\}$

End Behavior:  
R  $x \rightarrow +\infty \rightarrow \frac{1}{\infty}$   
L  $x \rightarrow -\infty \rightarrow \infty$



### Honors Math 3 - Solving Exponential Equations Worksheet

Solve each equation and circle your answer.

1.  $3^{5y} = 3^{y+1}$   $y = \frac{1}{4}$

2.  $3^x = 9^{x+1}$   $x = -2$

3.  $8^{x-1} = 16^{3x}$   $x = -\frac{1}{3}$

4.  $9^{3x} = 27^{x+2}$   $x = 2$

5.  $2^{2n-1} = 8^{n+7}$   $n = -22$

6.  $4^{x-1} = 8^x$   $x = -2$

7.  $5^{3x} = 5^{-3}$   $x = -1$

8.  $10^x = 0.001$   $x = -3$

9.  $16^{x-1} = 64^x$   $x = -2$

10.  $81^x = 9^{x^2-3}$   $x = -1, 3$

11.  $4^{x^2-2x} = 8^{x^2+1}$   $x = -1, -3$

12.  $\left(\frac{1}{6}\right)^x = 6^{x-6}$   $x = 3$

13.  $2^{2x} = \frac{1}{8}$   $x = -\frac{3}{2}$

14.  $64^3 = 4^{x^2}$   $x = \pm 3$