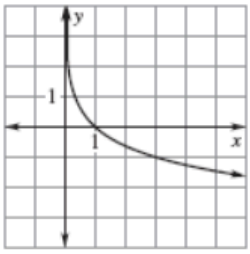
Algebra 2 Honors: Graphing Exponential and Logarithmic Functions

I.

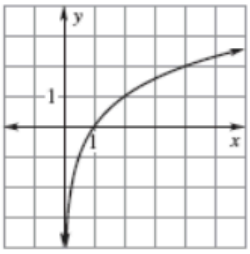
Match the function with its graph.

1. $f(x) = \log_2 x$ **2.** $f(x) = \log_5 x$ **3.** $f(x) = \log_{1/3} x$

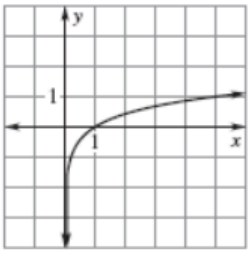
A.



B.



C.



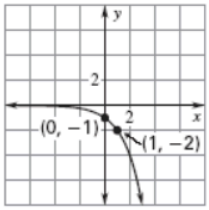
II.

Match each function with its graph.

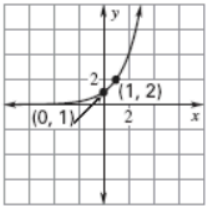
1. $f(x) = 2^x$ **2.** $f(x) = -2^x$ **3.** $f(x) = 4(2^x)$

4. $f(x) = \frac{1}{2}(2^x)$ **5.** $f(x) = -\frac{1}{2}(2^x)$ **6.** $f(x) = -4(2^x)$

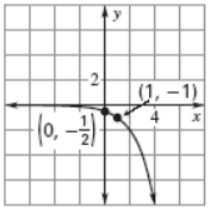
A.



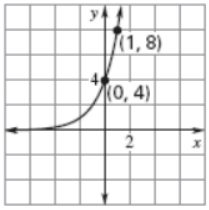
B.



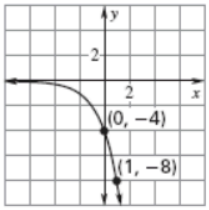
C.



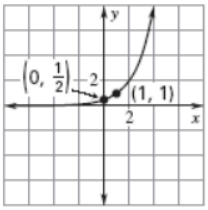
D.



E.



F.



III. Given $f(x) = 4^x$, write the function for the following transformations.

1. $f(x)$ shifts 6 units to the right

2. $f(x)$ shifts down 8 units

3. $f(x)$ stretches vertically by a factor of 2

4. $f(x)$ shifts right 7 units and as $x \to \infty$, $y \to -\infty$

IV. Tell whether the function represents exponential growth or decay. Sketch and state the domain and range in set notation.

1. $y = 3 \cdot 2^{x+2}$
2. $y = -\left(\frac{1}{4}\right)^{x-1}$
3. $y = 4 \cdot \left(\frac{1}{2}\right)^{x} - 3$
4. $y = 3e^{x} + 1$

V. Sketch each logarithmic function and state the domain and range in set notation.

1. $y = \log(x - 2) + 4$
2. $y = \ln x - 5$
3. $y = \log_{1/2} x$

VI. TRUE or FALSE.

$f(x) = 5(4)^{-x}$	$f(x) = 5(0.25)^{x}$	$h(x) = \left(\frac{1}{2}\right)^{x-2} + 3$	$r(x) = \log_4 x + 5$

1. f(x) and g(x) represent the same function.
2. The asymptote for h(x) is y = 2
3. The asymptote for r(x) is x = 5
4. f(x) is an exponential decay function.

ANSWERS

I.

1. B
2. C
3. A

II.

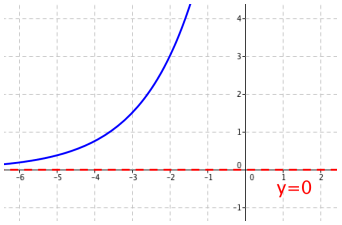
1. B
2. A
3. D
4. F
5. C
6. E

III.

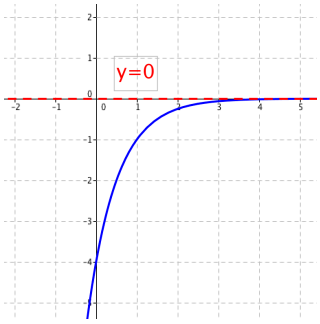
1. $y = 4^{x-6}$
2. $y = 4^{x} - 8$
3. $y = 2 \cdot 4^{x}$
4. $y = -4^{x-7}$

IV.

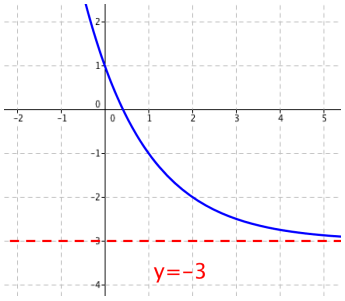
1. Exp. Growth
Domain: $\{x \mid x \in R\}$
Range: $\{y \mid y > 0\}$



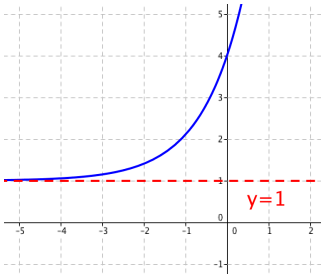
2. Exp. Decay
Domain: $\{x \mid x \in R\}$
Range: $\{y \mid y < 0\}$



3. Exp. Decay
Domain: $\{x \mid x \in R\}$
Range: $\{y \mid y > -3\}$

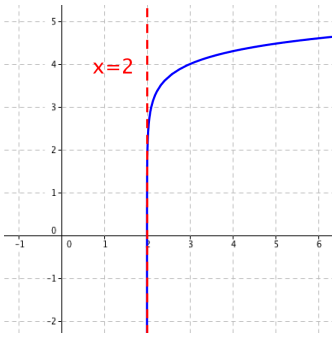


4. Exp. Growth
Domain: $\{x \mid x \in R\}$
Range: $\{y \mid y > 1\}$

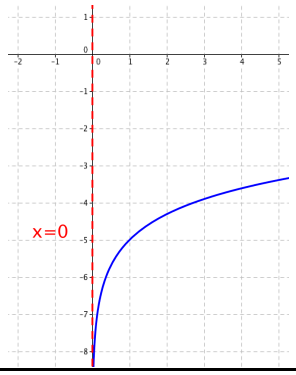


V.

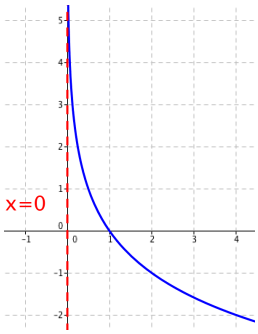
1.
Domain: $\{x \mid x > 2\}$
Range: $\{y \mid y \in R\}$



2.
Domain: $\{x \mid x > 0\}$
Range: $\{y \mid y \in R\}$



3.
Domain: $\{x \mid x > 0\}$
Range: $\{y \mid y \in R\}$



VI.

1. TRUE
2. FALSE
3. FALSE
4. TRUE