

## Midterm Review #3 (Log &amp; Exp Functions)

Date \_\_\_\_\_ Period \_\_\_\_\_

Solve each equation.

1)  $8\log_3 9x = 24$

- A)  $\left\{\frac{1}{1210}\right\}$       B)  $\{3\}$   
 C)  $\{43\}$       D)  $\{32\}$

2)  $3 + \log_5 3n = 7$

- A)  $\left\{-\frac{35}{12}\right\}$       B)  $\left\{\frac{625}{3}\right\}$   
 C)  $\left\{-\frac{2401}{6}\right\}$       D)  $\{9\}$

3)  $6\log_5 (r + 10) = 12$

- A)  $\left\{\frac{513}{64}\right\}$       B)  $\left\{\frac{25}{8}\right\}$   
 C)  $\{15\}$       D)  $\left\{\frac{1}{45}\right\}$

4)  $\log_6 (n + 3) + 4 = 8$

- A)  $\{1293\}$       B)  $\{-8\}$   
 C)  $\{69\}$       D)  $\{1009\}$

5)  $6 + \log_8 (x - 1) = 5$

- A)  $\left\{\frac{343}{6}\right\}$       B)  $\left\{\frac{9}{8}\right\}$   
 C)  $\{-1\}$       D)  $\{13\}$

6)  $\log_8 3x^2 - \log_8 6 = 3$

- A)  $\{1, -1\}$       B)  $\{32, -32\}$   
 C)  $\{3\}$       D)  $\{2, -2\}$

7)  $\log_6 5 - \log_6 (x + 8) = \log_6 70$

- A)  $\left\{-\frac{111}{14}\right\}$       B)  $\left\{-\frac{2}{45}\right\}$   
 C) No solution.      D)  $\left\{\frac{4}{15}\right\}$

8)  $\log_9 x + \log_9 (x + 24) = 2$

- A)  $\{1\}$       B)  $\{3\}$   
 C)  $\{-27, 12\}$       D)  $\{2\}$

9)  $\log_2 (x^2 + 6) - \log_2 3 = 1$

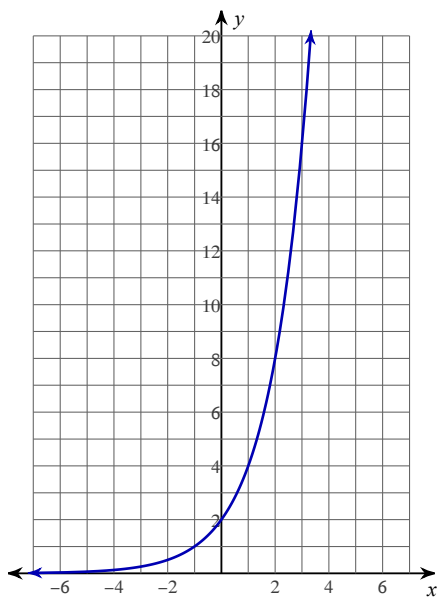
- A)  $\{4\}$       B)  $\{5\}$   
 C)  $\{3\}$       D)  $\{0\}$

10)  $\log_7 (x - 9) - \log_7 10 = 1$

- A)  $\left\{-\frac{175}{4}\right\}$       B)  $\{79\}$   
 C)  $\left\{-\frac{25}{4}\right\}$       D) No solution.

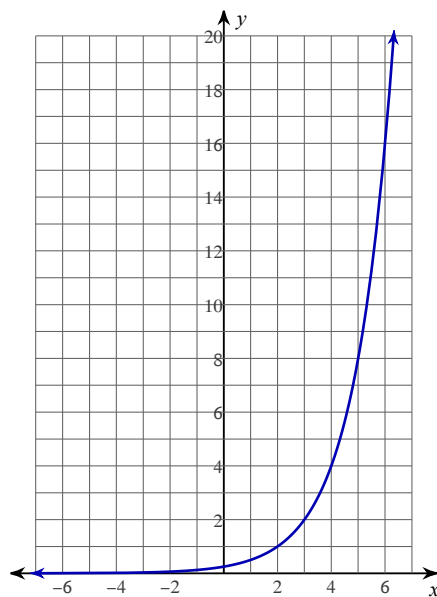
Write an equation for each graph.

11)



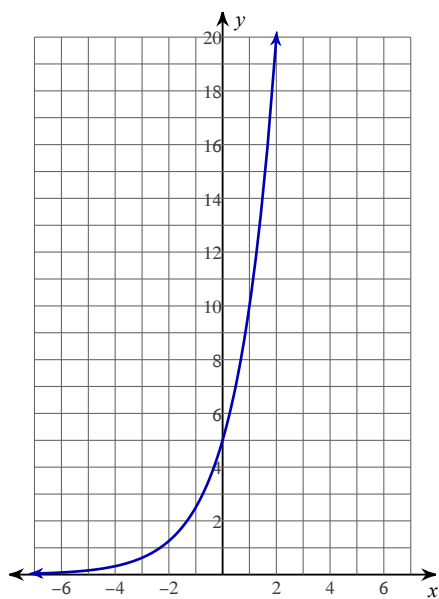
- A)  $y = \frac{1}{3} \cdot \left(\frac{1}{4}\right)^x$       B)  $y = 5 \cdot \left(\frac{1}{2}\right)^x$   
 C)  $y = 2 \cdot 2^x$                       D)  $y = 4 \cdot \left(\frac{1}{2}\right)^x$

12)



- A)  $y = \frac{1}{4} \cdot 2^x$                       B)  $y = 3 \cdot \left(\frac{1}{2}\right)^x$   
 C)  $y = 5 \cdot \left(\frac{1}{2}\right)^x$                       D)  $y = 2 \cdot \left(\frac{1}{4}\right)^x$

13)

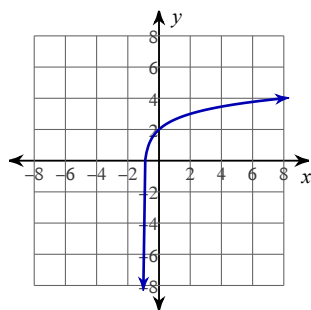


- A)  $y = 4 \cdot 2^x$                       B)  $y = \frac{1}{4} \cdot \left(\frac{1}{8}\right)^x$   
 C)  $y = 5 \cdot 2^x$                       D)  $y = \frac{1}{2} \cdot \left(\frac{1}{4}\right)^x$

Identify the domain and range of each. Then sketch the graph.

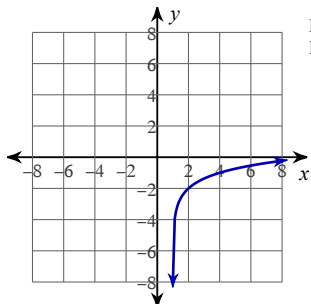
14)  $y = \log_3(x - 1) + 2$

A)



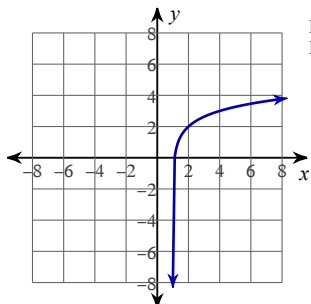
Domain:  $x > -1$   
Range: All reals

B)



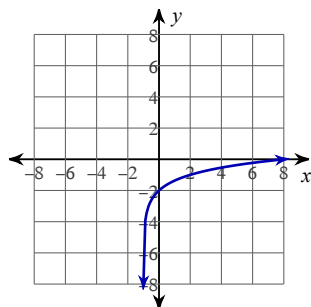
Domain:  $x > 1$   
Range: All reals

C)



Domain:  $x > 1$   
Range: All reals

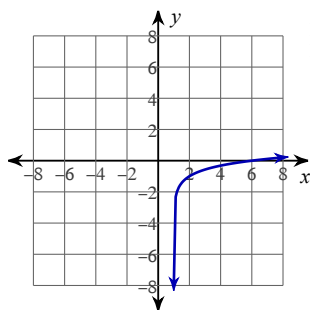
D)



Domain:  $x > -1$   
Range: All reals

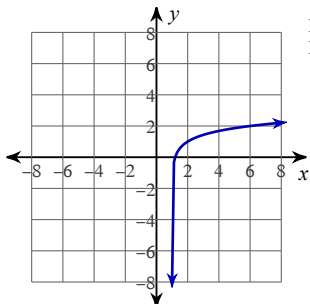
15)  $y = \log_5(x - 1) + 1$

A)



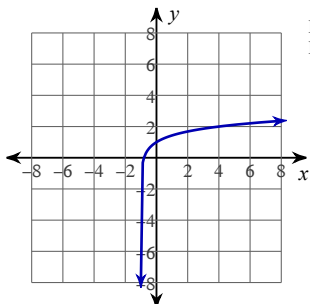
Domain:  $x > 1$   
Range: All reals

B)



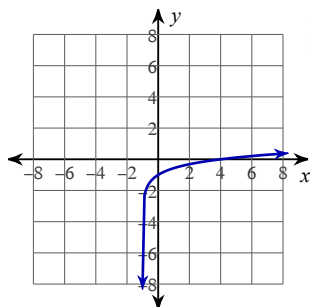
Domain:  $x > 1$   
Range: All reals

C)



Domain:  $x > -1$   
Range: All reals

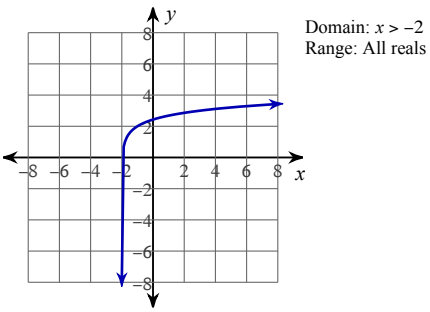
D)



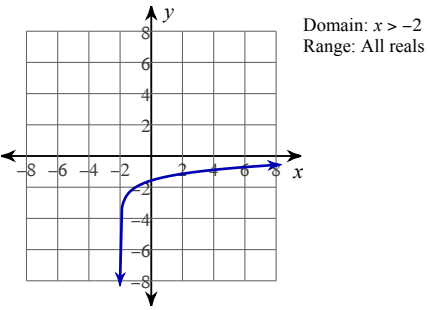
Domain:  $x > -1$   
Range: All reals

16)  $y = \log_5(x - 2) - 2$

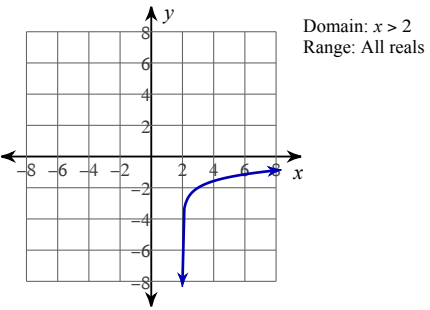
A)



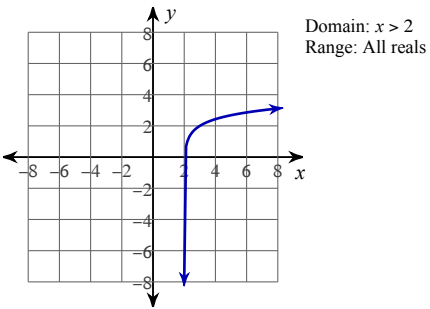
B)



C)



D)



## Answers to Midterm Review #3 (Log & Exp Functions) (ID: 1)

1) B  
5) B  
9) D  
13) C

2) B  
6) B  
10) B  
14) C

3) C  
7) A  
11) C  
15) B

4) A  
8) B  
12) A  
16) C