

Use when you get it right all by yourself

**S** Use when you did it all by yourself, but made a silly mistake

**H** Use when you could do it alone with a little help from teacher or peer

**G** Use when you completed the problem in a group

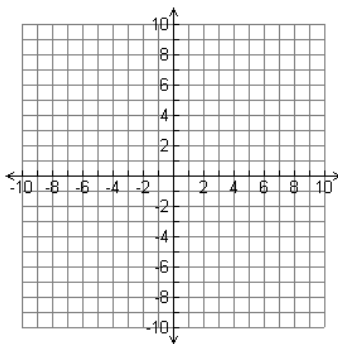
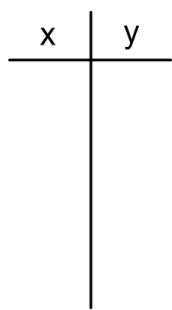
**X** Use when a question was attempted but wrong (get help)

**N** Use when a question was not even attempted

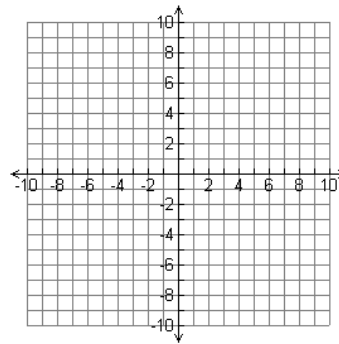
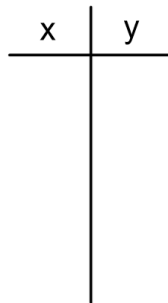
CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Sketching exponential functions		1 - 6	
Sketching logarithmic functions		15 - 22	7 - 14
Creating t-charts	1 - 6	7 - 14	
Describing domain & range in interval notation	1 - 10		
Identifying the y-intercept	1 - 6	7 - 14	
Identifying the pivot point (PP)/common point		1 - 6	7 - 14
Identifying the horizontal (HA) or vertical (VA) asymptote	1 - 6	7 - 14	
Transformations of exponential functions		1 - 6	
Transformations of logarithmic functions	15 - 22	7 - 14	24
Increasing VS Decreasing		23	

Sketch the following without the use of a graphing calculator by creating a T-chart. Identify the domain and range in interval notation, y-intercept, pivot point (PP), and the horizontal asymptote.

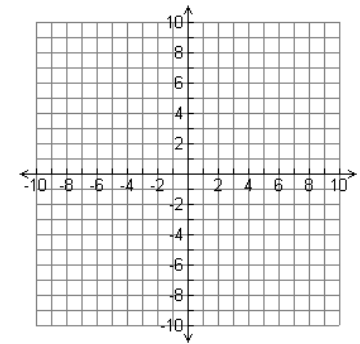
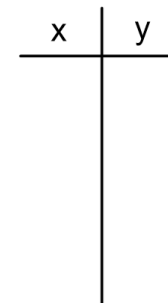
1)  $y = -2^x + 3$



2)  $y = -3^{-x}$



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

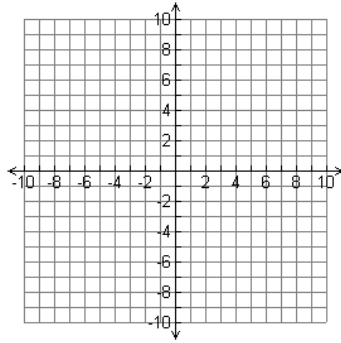
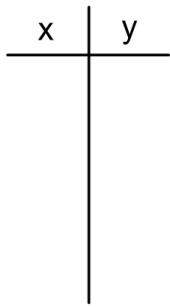


D: \_\_\_\_\_ R: \_\_\_\_\_  
 as  $x \rightarrow$  \_\_\_\_\_;  $y \rightarrow$  \_\_\_\_\_  
 as  $x \rightarrow$  \_\_\_\_\_;  $y \rightarrow$  \_\_\_\_\_  
 y intercept \_\_\_\_\_  
 pp \_\_\_\_\_ ha \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_  
 as  $x \rightarrow$  \_\_\_\_\_;  $y \rightarrow$  \_\_\_\_\_  
 as  $x \rightarrow$  \_\_\_\_\_;  $y \rightarrow$  \_\_\_\_\_  
 y intercept \_\_\_\_\_  
 pp \_\_\_\_\_ ha \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_  
 as  $x \rightarrow$  \_\_\_\_\_;  $y \rightarrow$  \_\_\_\_\_  
 as  $x \rightarrow$  \_\_\_\_\_;  $y \rightarrow$  \_\_\_\_\_  
 y intercept \_\_\_\_\_  
 pp \_\_\_\_\_ ha \_\_\_\_\_

4)  $y = 5^{x+1}$



D: \_\_\_\_\_ R: \_\_\_\_\_

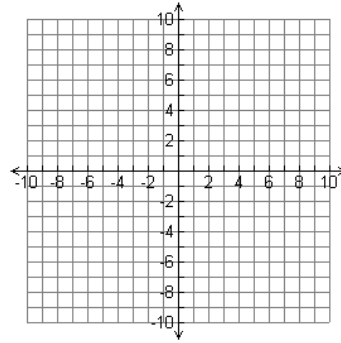
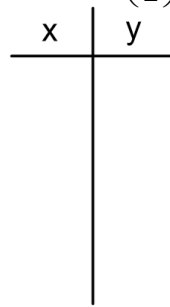
as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

y intercept \_\_\_\_\_

pp \_\_\_\_\_ ha \_\_\_\_\_

5)  $y = -\left(\frac{1}{2}\right)^x$



D: \_\_\_\_\_ R: \_\_\_\_\_

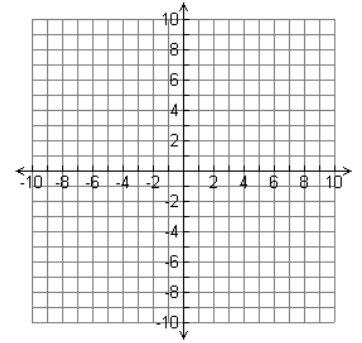
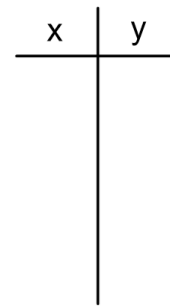
as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

y intercept \_\_\_\_\_

pp \_\_\_\_\_ ha \_\_\_\_\_

6)  $f(x) = -2^{-x}$



D: \_\_\_\_\_ R: \_\_\_\_\_

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

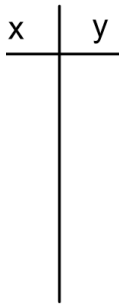
as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

y intercept \_\_\_\_\_

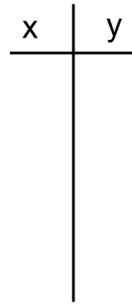
pp \_\_\_\_\_ ha \_\_\_\_\_

**Sketch the following functions. Identify the domain and range in interval notation, pivot point (PP), and the vertical asymptote.**

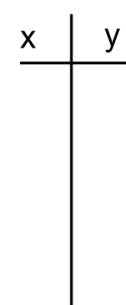
7)  $f(x) = \log x$



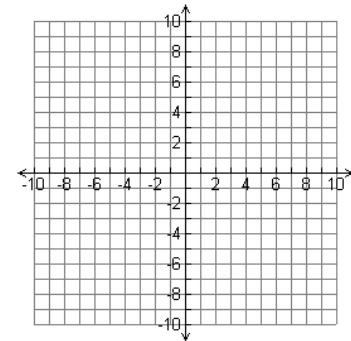
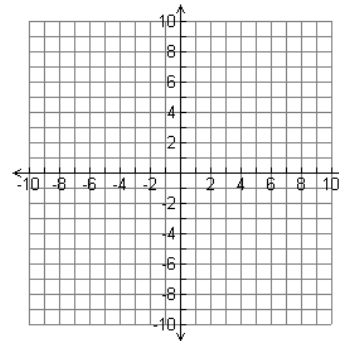
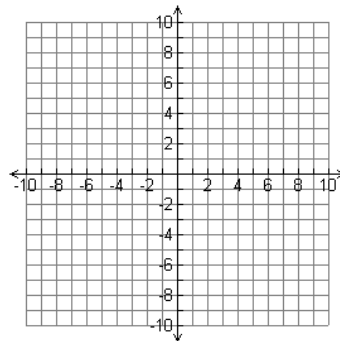
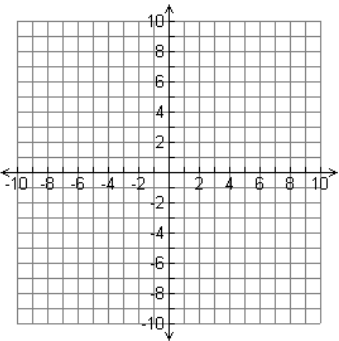
8)  $y = -\log x + 1$



9)  $f(x) = \log(-x)$



10)  $f(x) = \log(x+3)$



D: \_\_\_\_\_ R: \_\_\_\_\_

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

pp \_\_\_\_\_ va \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

pp \_\_\_\_\_ va \_\_\_\_\_

D: \_\_\_\_\_ R: \_\_\_\_\_

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

pp \_\_\_\_\_ va \_\_\_\_\_

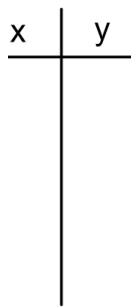
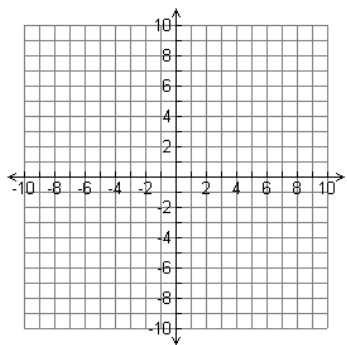
D: \_\_\_\_\_ R: \_\_\_\_\_

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

as  $x \rightarrow \text{_____}; y \rightarrow \text{_____}$

pp \_\_\_\_\_ va \_\_\_\_\_

11)  $f(x) = \ln x - 1$



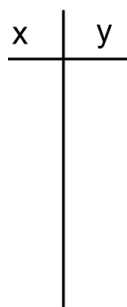
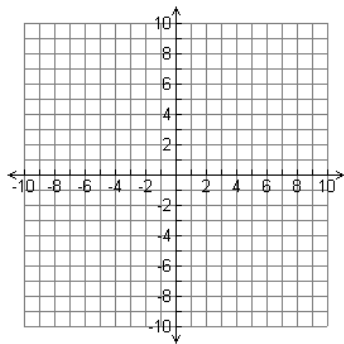
D:                      R:

as  $x \rightarrow \_\_\_\_\_\_; y \rightarrow \_\_\_\_\_\_$

as  $x \rightarrow \_\_\_\_\_\_; y \rightarrow \_\_\_\_\_\_$

pp  $\_\_\_\_\_\_ \text{ va } \_\_\_\_\_\_$

12)  $y = \ln(x-1)$



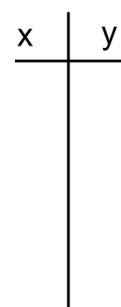
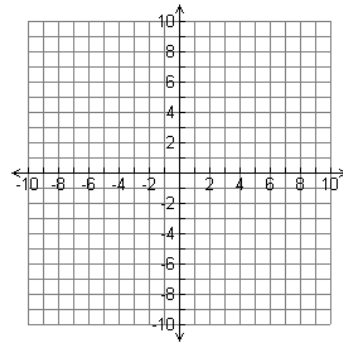
D:                      R:

as  $x \rightarrow \_\_\_\_\_\_; y \rightarrow \_\_\_\_\_\_$

as  $x \rightarrow \_\_\_\_\_\_; y \rightarrow \_\_\_\_\_\_$

pp  $\_\_\_\_\_\_ \text{ va } \_\_\_\_\_\_$

13)  $f(x) = -\ln x$



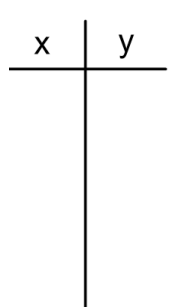
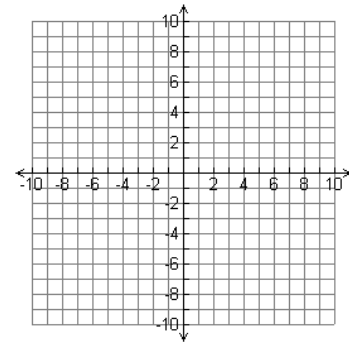
D:                      R:

as  $x \rightarrow \_\_\_\_\_\_; y \rightarrow \_\_\_\_\_\_$

as  $x \rightarrow \_\_\_\_\_\_; y \rightarrow \_\_\_\_\_\_$

pp  $\_\_\_\_\_\_ \text{ va } \_\_\_\_\_\_$

14)  $\ln(-x) + 1$



D:                      R:

as  $x \rightarrow \_\_\_\_\_\_; y \rightarrow \_\_\_\_\_\_$

as  $x \rightarrow \_\_\_\_\_\_; y \rightarrow \_\_\_\_\_\_$

pp  $\_\_\_\_\_\_ \text{ va } \_\_\_\_\_\_$

**For #15 – 22, match the equation to the correct graph.**

A.  $y = 3^x$

B.  $y = 3^{-x}$

C.  $y = -3^x$

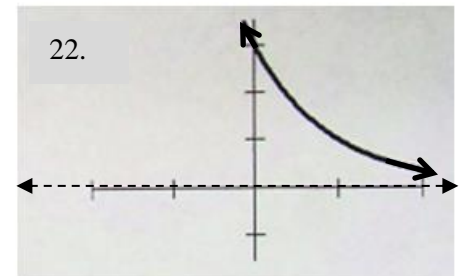
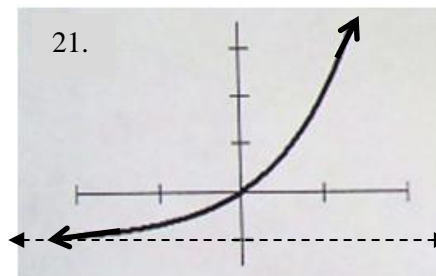
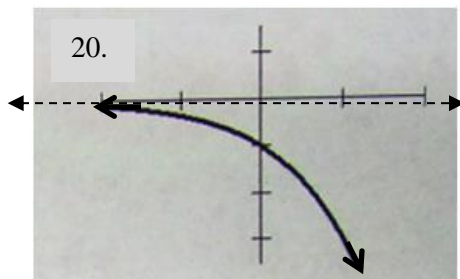
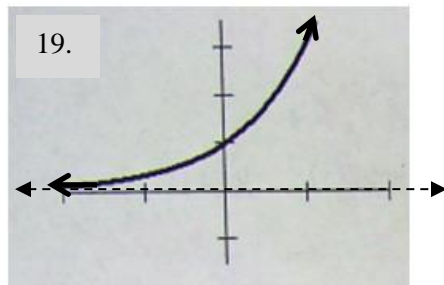
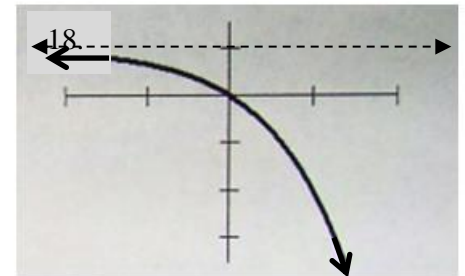
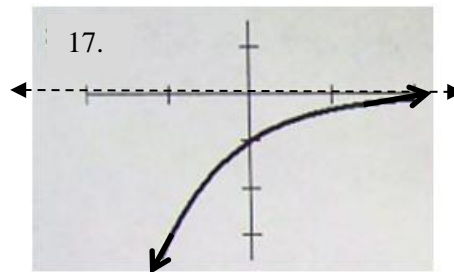
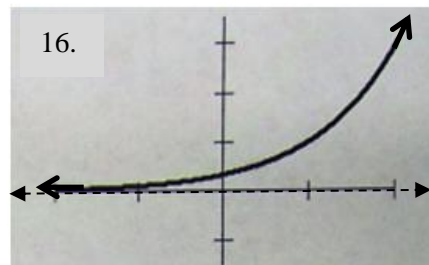
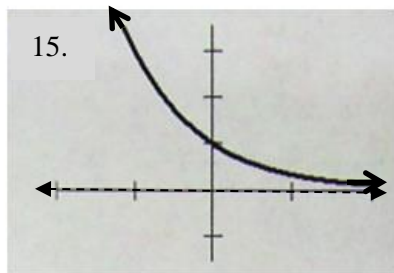
D.  $y = -3^{-x}$

E.  $y = 3^x - 1$

F.  $y = 3^{x-1}$

G.  $y = 3^{1-x}$

H.  $y = 1 - 3^x$



23. Which functions, in questions 15 – 22, must be increasing?

24. What type of transformation makes the logarithmic curve move below the horizontal asymptote?

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**CYU Reflection:** *How far can you go: basic, intermediate, or advanced?*

**Rate your mastery level!**

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

