

Logarithms Assessment Practice Test

10. The limiting magnitude of a telescope is the magnitude of the faintest star that can be seen with the telescope. The formula:

$$L = 17.1 + 5.1 \log D$$

relates the limiting magnitude L to the diameter D of the lens in meters. What lens diameter would result in a limiting magnitude of 21?

11. Solve for m : $\ln(m + 3) = -\frac{1}{2}$

12. Solve for t : $\log_4 t^4 - 1 = -5$. Round your answer to the nearest hundredth.

Supplemental: I can use formulas for common logarithms in real life applications, such as the Richter scale, the pH scale, and the decibel scale.

- _____ 13. How much money invested at 5% compounded continuously for 3 years will yield \$820?
Hint: You are looking for "P."
a. \$952.70 b. \$818.84 c. \$780.01 d. \$705.78

- _____ 14. The table shows the location and magnitude of some notable earthquakes. How many times more energy was released by the earthquake in Peru than by the earthquake in Mexico?

Earthquake Location	Date	Richter Scale Measure
Italy	October 31, 2002	5.9
El Salvador	February 13, 2001	6.6
Afghanistan	May 30, 1998	6.9
Mexico	January 22, 2003	7.6
Peru	June 23, 2001	8.1

- a. about 15 times as much energy c. about 0.50 times as much energy
b. about 5.48 times as much energy d. about 37.52 times as much energy
- _____ 15. How many more times intense is a sound 80 dB than a sound 60 dB?
a. 20 times more intense c. 2 times more intense
b. 100 times more intense d. 30 times more intense
- _____ 16. **The pH of a liquid is a measure of how acidic or basic it is. The concentration of hydrogen ions in a liquid is labeled $[H^+]$. Use the formula $pH = -\log [H^+]$ to answer questions about pH.**

Find the pH level, to the nearest tenth, of a liquid with $[H^+]$ about 6.5×10^{-3} .

- a. -3.8 b. 3.8 c. 2.2 d. 3.0

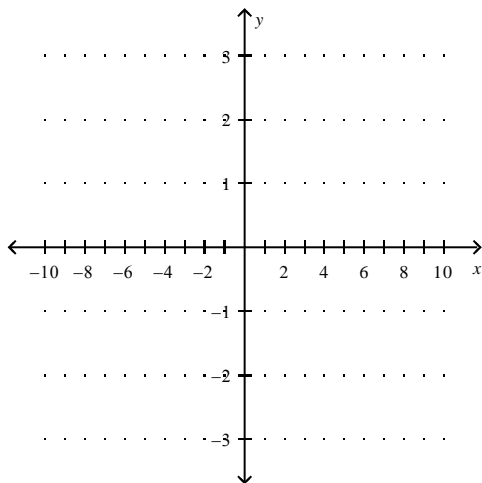
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- _____ 17. The pH of a juice drink is 2.6. Find the concentration of hydrogen ions in the drink.
a. 2.6 b. 2.5×10^{-3} c. $10^{-2.6}$ d. 2.5×10^3

18. How many times more acidic is a solution with pH = 1.7 than a solution with pH = 5.7?

OA.5: I can identify the translation and compression/reflection of an exponential function or a logarithmic function using Graph Translation Theorem

19. Graph $y = \log_6 x$ on the coordinate plane. Label the coordinates of three distinct points on the graph.



- 20.

Consider the function $h(x) = e^x$.

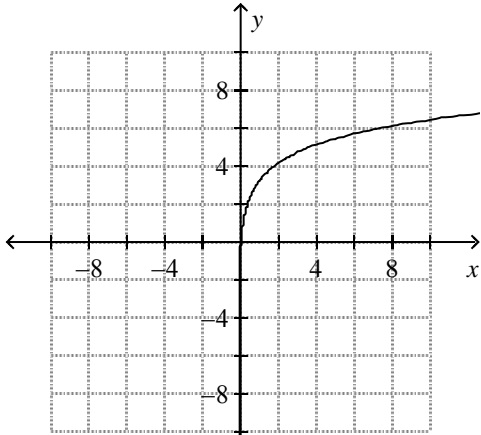
a) What is the domain of h ?

b) What is the range of h ?

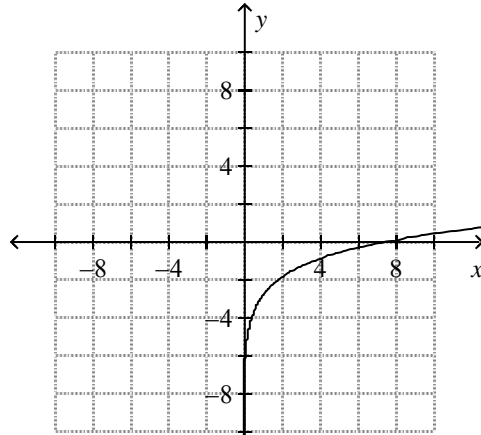
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21. Which graph below is of the function $y = \log_2 x - 3$?

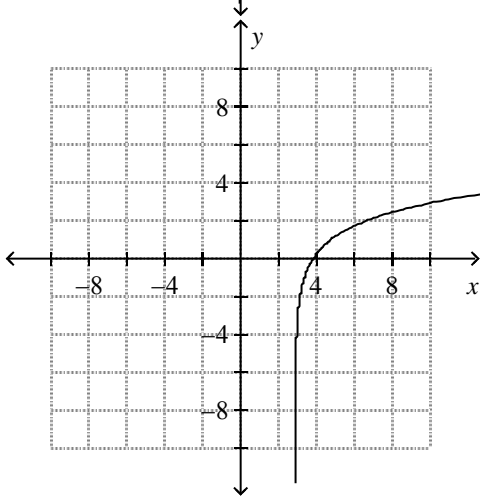
a.



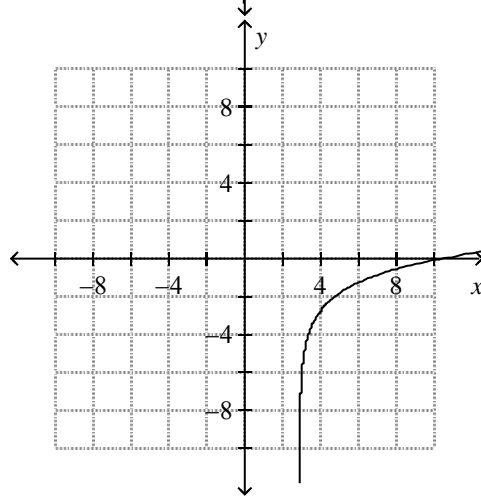
c.



b.

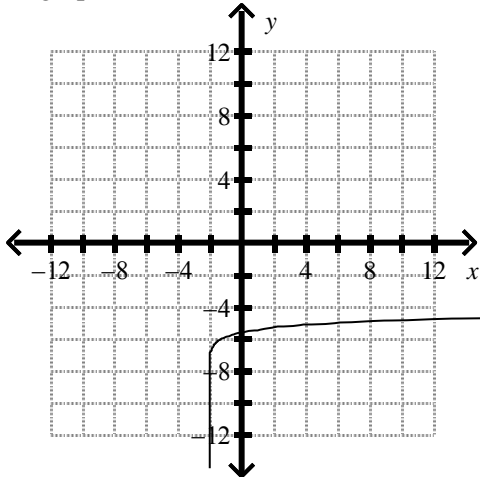


d.

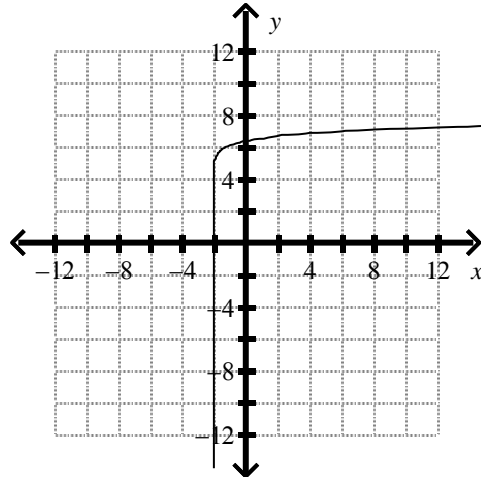


22. Which graph below is of the function $y = \log(x + 2) - 6$?

a.

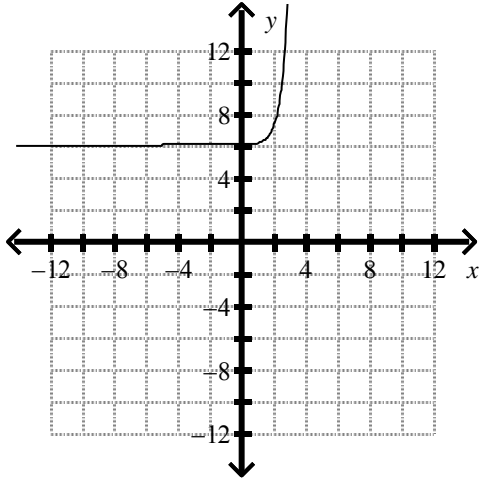


c.

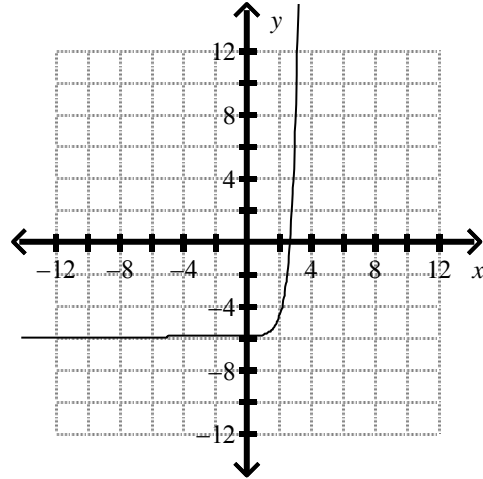


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b.



d.



23. Consider the function $f(x) = \log_2 x$.

a) Identify the domain of $f(x)$.

b) Write the equation that represents the inverse of this function.

c) *Type II Writing:* Is the inverse a function? Justify your answer, using a diagram, table, or definition to help.

d) Identify the domain of the inverse.

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1. B
2. A
3. 1.712
4. $9/5 = 1.8$
5. A
6. A
7. A
8. 0.3375
9. 27 choices
10. 5.82 m
11. $m = -2.39$
12. $t = 1/4$
13. D
14. B
15. B
16. C
17. B
18. 10,000 more intense
19. see graph
20. a) domain is all real numbers
b) range is all positive real numbers
21. B
22. A
23. see work