

Write the equation in logarithmic form.

1. $2^4 = 16$

2. $15^0 = 1$

3. $5^{-2} = \frac{1}{25}$

4. $49^{\frac{1}{2}} = 7$

Write the equation in exponential form.

5. $\log_4 16 = 2$

6. $\log_{64} 4 = \frac{1}{3}$

7. $\log_6 \frac{1}{36} = -2$

8. $\log_{20} 1 = 0$

Evaluate each expression.

9. $\log_3 243$

10. $\log_5 \frac{1}{125}$

11. $\log_{\frac{1}{4}} 256$

12. $\log_7 49$

13. $\log_3 1$

14. $\log_{\frac{1}{2}} 16$

15. $\log_{27} 3$

16. $\log_9 81$

17. $\log_3 \frac{1}{3}$

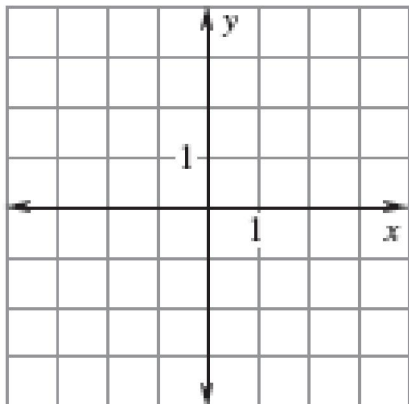
18. $4^{\log_4 6}$

19. $2^{\log_3 3^4}$

20. $\log_2 2^5$

Graph the following Logarithmic functions.

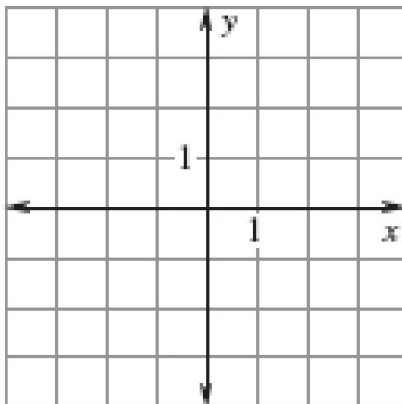
21. $y = \log_2(x)$



Equation of the Vertical Asymptote: _____

Domain: _____ Range _____

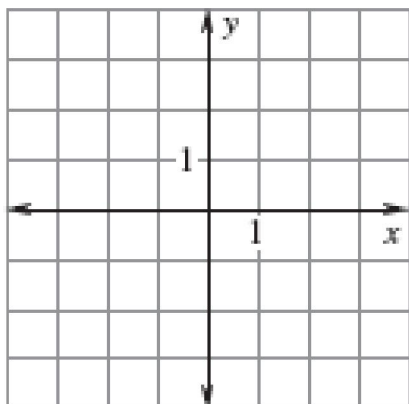
22. $y = \log_2(x) - 3$



Equation of the Vertical Asymptote: _____

Domain: _____ Range _____

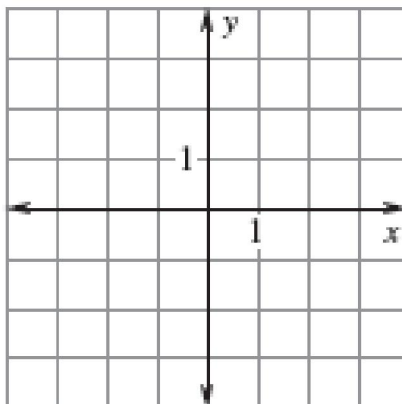
23. $y = \log_2(x + 3)$



Equation of the Vertical Asymptote: _____

Domain: _____ Range _____

24. $y = \log_2(x + 3) - 4$



Equation of the Vertical Asymptote: _____

Domain: _____ Range _____

25. $y = 2\log_2(x - 3) + 1$

Equation of the Vertical Asymptote: _____

Domain: _____ Range _____

