

Write each equation in logarithmic form:

1. $5^0 = 1$

$$\log_5 1 = 0$$

2. $27^{4/3} = 81$

$$\log_{27} 81 = \frac{4}{3}$$

3. $2^5 = 32$

$$\log_2 32 = 5$$

4. $6^{-2} = \frac{1}{36}$

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

Write each equation in exponential form:

5. $\log_4 64 = 3$

$$4^3 = 64$$

6. $\log_{3/2} \frac{\sqrt{6}}{3} = -\frac{1}{2}$

$$\left(\frac{3}{2}\right)^{-1/2} = \frac{\sqrt{6}}{3}$$

7. $\log_7 \frac{1}{49} = -2$

$$7^{-2} = \frac{1}{49}$$

8. $\log_{16} 8 = \frac{3}{4}$

$$16^{3/4} = 8$$

9. $\log_3 \frac{1}{9} = -2$

$$3^{-2} = \frac{1}{9}$$

10. $\log_5 125 = 3$

$$5^3 = 125$$

Solve each log expression without a calculator:

11. $\log_9 81$

$$2$$

12. $\log_8 1$

$$0$$

13. $\log_4 2$

$$1/2$$

14. $\log_3 81$

$$4$$

15. $\log_{10} 0.0001$

$$-4$$

16. $\log_2 \frac{1}{16}$

$$-4$$

17. $\log_{1/3} 27$

$$-3$$

18. $\log_4 x = \frac{3}{2}$

$$8$$

19. $\log_y 16 = -4$

$$1/2$$

Graph the following log equations including any asymptotes. Use attached graph paper grids

20. $f(x) = \log_4 x$

21. $f(x) = \log_6 x$

22. $f(x) = -\log_3 x + 2$

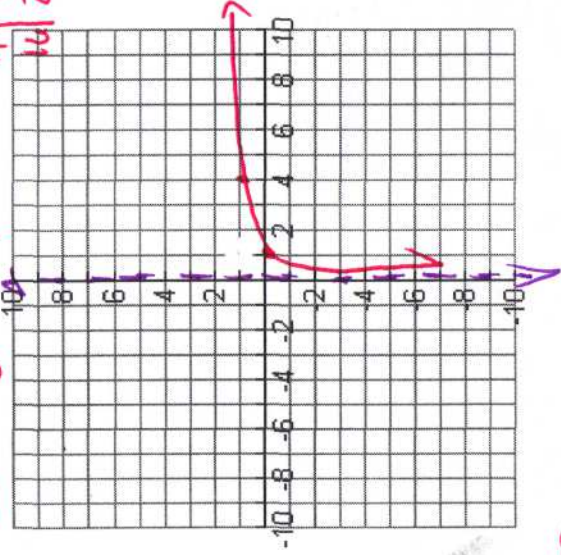
23. $f(x) = \log_4 (x - 3)$

24. $f(x) = -\log_6 (x + 2)$

25. $f(x) = \log (-x)$

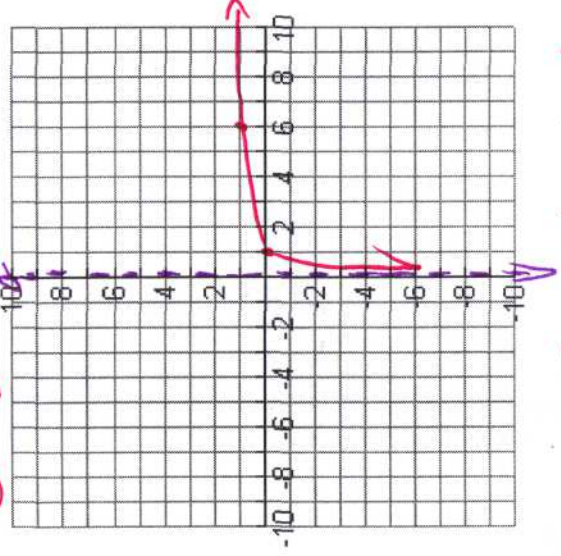
$$\begin{array}{r} x \ y \\ 1 \ 0 \\ 4 \ 1 \\ 16 \ 2 \end{array}$$

(20) $y = \log_4 x$

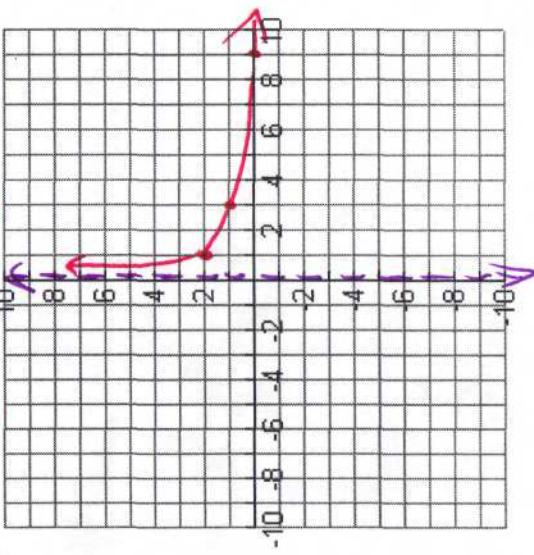


(21) $y \approx \log_6 x$

$$\begin{array}{r} x \ y \\ 1 \ 0 \\ 6 \ 1 \\ 36 \ 2 \end{array}$$

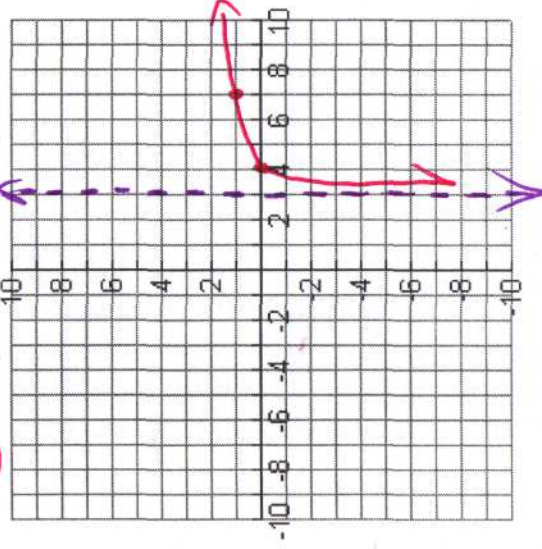


(22) $f(x) = -\log_3 x + 2$



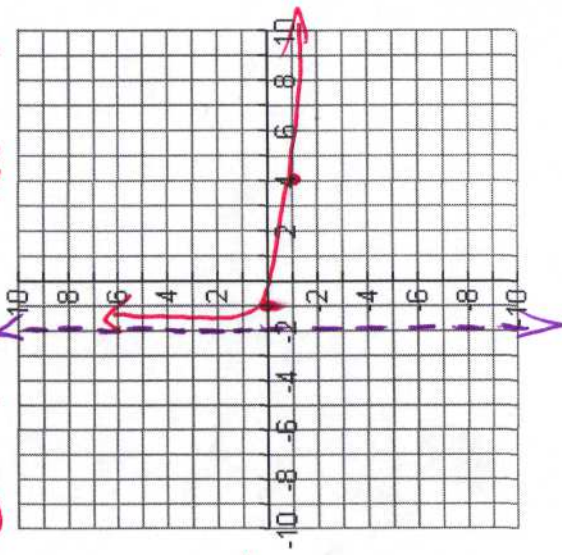
$$\begin{array}{r} x \ y \\ 1 \ 2 \\ 3 \ 1 \\ 9 \ 0 \end{array}$$

(23) $f(x) = \log_4(x-3)$



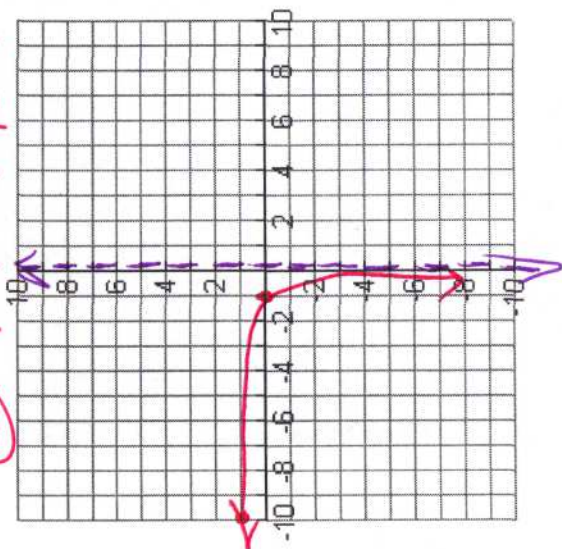
$$\begin{array}{r} x \ y \\ 4 \ 0 \\ 5 \ 1 \\ 19 \ 2 \end{array}$$

(24) $f(x) = -\log_6(x+2)$



$$\begin{array}{r} x \ y \\ -1 \ 2 \\ -2 \ 1 \\ -4 \ 0 \end{array}$$

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



$$\begin{array}{r} x \ y \\ -1 \ 0 \\ -2 \ 1 \\ -4 \ 2 \end{array}$$