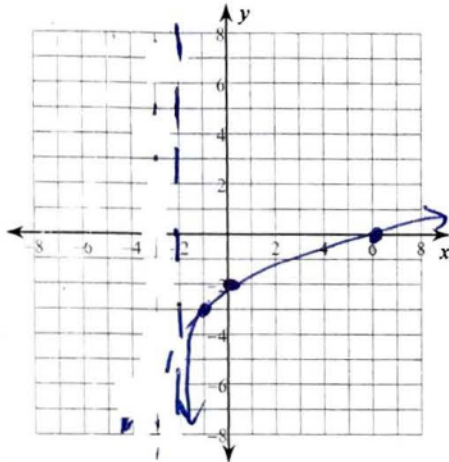


Assignment

Identify the domain, range, asymptote and intercept of each. Then sketch the graph.

1)  $f(x) = \log_2(x+2) - 3$

$-2 \log_2 x \leftarrow -3$   
 $\begin{array}{c|c} x & y \\ \hline 1 & 0 \\ 2 & 1 \end{array}$   
 $\log_2(x+2)+3$   
 $\begin{array}{c|c} x & y \\ \hline -1 & -3 \\ 0 & -2 \end{array}$

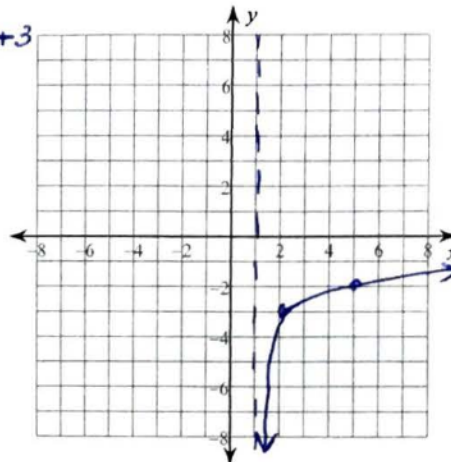


D:  $\{x \in \mathbb{R} \mid x > -2\}$   
 R:  $\{y \in \mathbb{R}\}$   
 Intercept: (6, 0)  
 V.A:  $x = -2$

$\log_2(x+2) - 3 = 0$   
 $\log_2(x+2) = 3$   
 $x+2 = 2^3$   
 $x+2 = 8$   
 $\frac{2-2}{2-2}$   
 $x = 6$   
 (6, 0)

2)  $f(x) = \log_4(x-1) - 3$

$\log_4 x$   
 $\begin{array}{c|c} x & y \\ \hline 1 & 0 \\ 4 & 1 \end{array}$



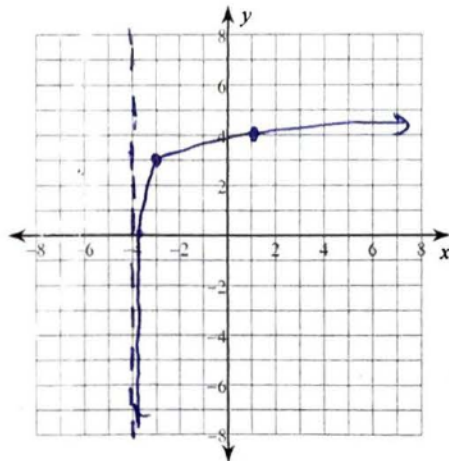
D:  $\{x \in \mathbb{R} \mid x > 1\}$   
 R:  $\{y \in \mathbb{R}\}$   
 Intercepts: (65, 0)  
 V.A:  $x = 1$

$\log_4(x-1) - 3$   
 $+1 \leftarrow x, y \leftarrow -3$   
 $\begin{array}{c|c} x & y \\ \hline 2 & -3 \\ 5 & -2 \end{array}$

$\log_4(x-1) - 3 = 0$   
 $\log_4(x-1) = 3$   
 $x-1 = 4^3$   
 $x-1 = 64$   
 $x = 65$

3)  $f(x) = \log_5(x+4) + 3$

$\log_5 x$   
 $\begin{array}{c|c} x & y \\ \hline 1 & 0 \\ 5 & 1 \end{array}$



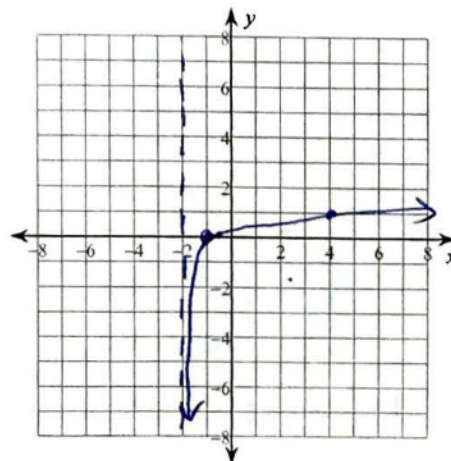
D:  $\{x \in \mathbb{R} \mid x > -4\}$   
 R:  $\{y \in \mathbb{R}\}$   
 Intercept: (-3.992, 0)  
 V.A:  $x = -4$

$\log_5(x+4) + 3$   
 $-4 \leftarrow x, y \leftarrow 3$   
 $\begin{array}{c|c} x & y \\ \hline -3 & 3 \\ 1 & 4 \end{array}$

$\log_5(x+4) + 3 = 0$   
 $\log_5(x+4) = -3$   
 $x+4 = 5^{-3}$   
 $x+4 = \frac{1}{125}$   
 $x = \frac{1}{125} - 4 = \frac{1}{125} - \frac{500}{125}$   
 $x = -\frac{499}{125} \approx -3.992$

4)  $f(x) = \log_6(x+2)$

$\log_6 x$   
 $\begin{array}{c|c} x & y \\ \hline 1 & 0 \\ 6 & 1 \end{array}$

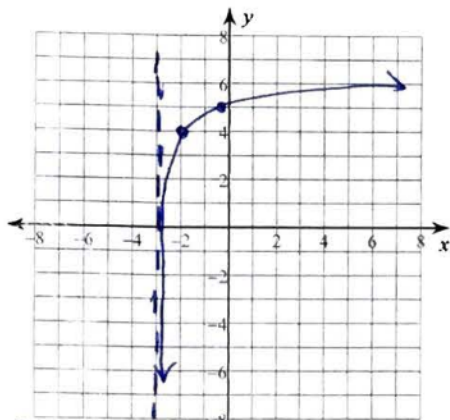


D:  $\{x \in \mathbb{R} \mid x > -2\}$   
 R:  $\{y \in \mathbb{R}\}$   
 Intercepts: (-1, 0)  
 V.A:  $x = -2$

$\log_6(x+2)$   
 $-2 \leftarrow x, y$   
 $\begin{array}{c|c} x & y \\ \hline -1 & 0 \\ 4 & 1 \end{array}$

$\log_6(x+2) = 0$   
 $x+2 = 6^0$   
 $x+2 = 1$   
 $x = -1$

5)  $f(x) = \ln(x+3) + 4$



D:  $\{x \in \mathbb{R} \mid x > -3\}$   
 R:  $\{y \in \mathbb{R}\}$   
 VA:  $x = -3$   
 Intercept  $(-2.98, 0)$

Evaluate each expression.

7)  $\log_2 64 = x$

$64 = 2^x$        $x = 6$

$2^6 = 2^x$

9)  $\log_3 9 = x$

$9 = 3^x$

$3^2 = 3^x$

$2 = x$

Rewrite each equation in exponential form.

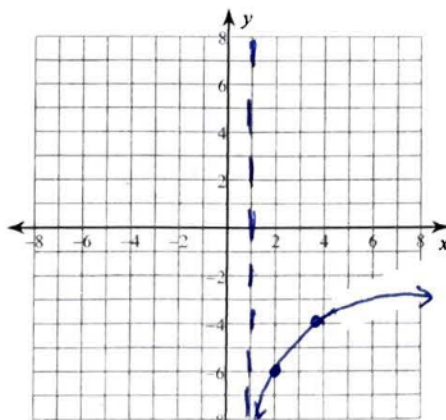
11)  $\log_{361} \frac{1}{19} = -\frac{1}{2}$

$\frac{1}{19} = 361^{-1/2}$

13)  $\log_{16} 256 = 2$

$256 = 16^2$

6)  $f(x) = \ln(x-1) - 5$



D:  $\{x \in \mathbb{R} \mid x > 1\}$

R:  $\{y \in \mathbb{R}\}$

VA:  $x = 1$

Intercept  $(149.41, 0)$

$\ln x$   
 $\frac{x}{y}$   
 $e|1$

$\log(x+3) + 4$   
 $-3 \leftarrow x \rightarrow +4$   
 $-2 \mid 4$   
 $= 20 \mid 5$

$\ln(x+3) + 4 = 0$

$e^{\ln(x+3)} = e^{-4}$

$x+3 = e^{-4}$

$x = e^{-4} - 3$

$x \approx -2.98$

$\ln x$   
 $\frac{x}{y}$   
 $e|1$

$\ln(x-1) - 5$   
 $+1 \rightarrow x \leftarrow -5$   
 $\frac{x}{y}$   
 $2 \mid -5$   
 $\approx 3.71 \mid -4$

$\ln(x-1) - 5 = 0$

$e^{\ln(x-1)} = e^5$

$x-1 = e^5$

$x = e^5 + 1$

$x \approx 149.41$

8)  $\log_6 36 = x$

$36 = 6^x$

$6^2 = 6^x$

$2 = x$

\* 10)  $\log_4 1 = x$

$1 = 4^x$

$0 = x$

Solve each equation. Round your answers to the nearest ten-thousandth.

15)  $e^x = 77$

$x = 4.3438$

16)  $e^m = 56$

$m = 4.0254$

Solve each equation.

17)  $\log_7 v = 2$

$7^2 = v$

$49 = v$

18)  $\log_6 m = 2$

$6^2 = m$

$36 = m$

19)  $\log_5 r = 3$

$5^3 = r$

$125 = r$

20)  $\log_4 n = 1$

$4^1 = n$

$4 = n$

$$125 = 5^3$$

$$-2$$

$$4 = 2^2$$