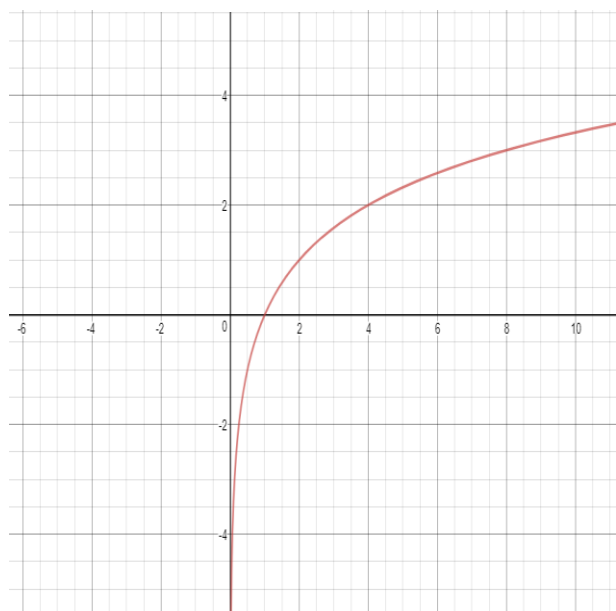


Graph each function and find the indicated limit.

1a)  $f(x) = \log_2 x$

$$\lim_{x \rightarrow \infty} f(x)$$

$$\lim_{x \rightarrow 0^+} f(x)$$



$$\lim_{x \rightarrow \infty} f(x) = +\infty$$

$$\lim_{x \rightarrow 0^+} f(x) = -\infty$$

1b)  $f(x) = \ln(x-2)$

$$\lim_{x \rightarrow \infty} f(x)$$

$$\lim_{x \rightarrow 2^+} f(x)$$

Use properties of logarithms to rewrite the expression as a sum or difference of logarithms.

2a)  $\ln z(z-1)^2$   
 $= \ln z + \ln(z-1)^2$   
 $= \ln z + 2 \ln(z-1)$

2b)  $\ln(x\sqrt{x^2+5})$

2c)  $\ln \sqrt{\frac{x-1}{x}}$

Solve each equation for “x” accurate to three decimal places.

3a)  $50e^{-x} = 30$

$$e^{-x} = \frac{3}{5}$$

$$-x = \ln\left(\frac{3}{5}\right)$$

$$x = \ln\left(\frac{5}{3}\right)$$

$$\approx 0.511$$

3b)  $\frac{800}{100 - e^{x/2}} = 50$

3c)  $2^{3-z} = 625$

4a)  $\log_3 x^2 = 4.5$

$$x^2 = 3^{4.5}$$

$$x = \pm\sqrt{3^{4.5}} \approx \pm 11.845$$

4b)  $\ln(x - 3) = 2$

4c)  $\log_2(x - 1) = 5$