Since the logarithms and functions are inverses we have:

$$b^{\log_b x} = x \qquad\qquad \log_b(b^x) = x,$$

for $b > 0$ and $b \neq 1$.

1. Evaluate the following logarithms

   (a) $\ln(\frac{1}{e^2})$

   (b) $\log(1000)$

   (c) $\log_4(\frac{1}{2})$

   (d) $\ln(e^7)$

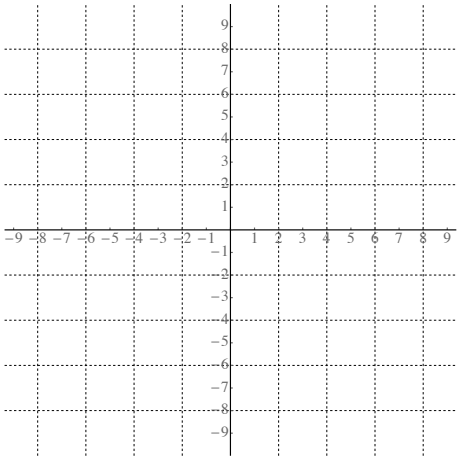
   (e) $e^{\ln(4)}$

   (f) $7^{\log_7(13)}$

2. Graph using transformations $f(x) = 5\log_7(2x - 1)$

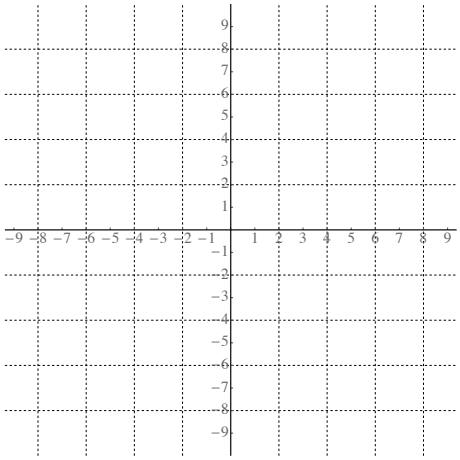
(i) parent function:

y=



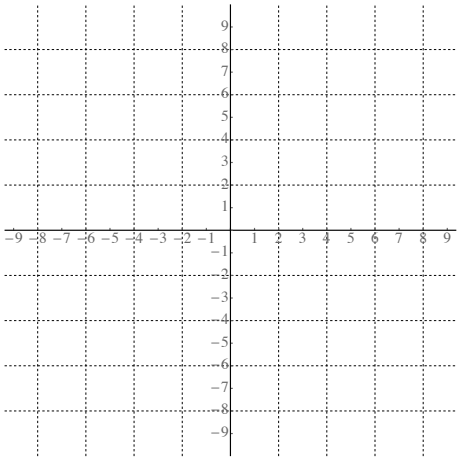
(ii) transformation:

y=



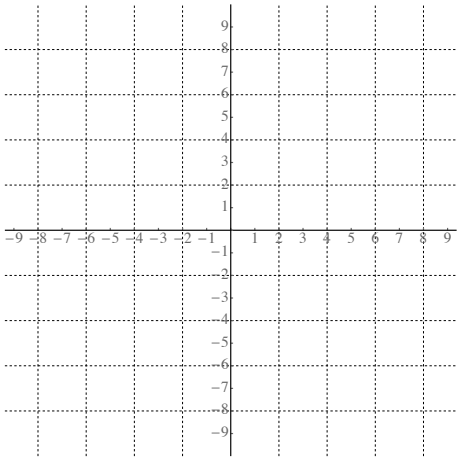
(iii) transformation:

y=



(iv) transformation:

y=

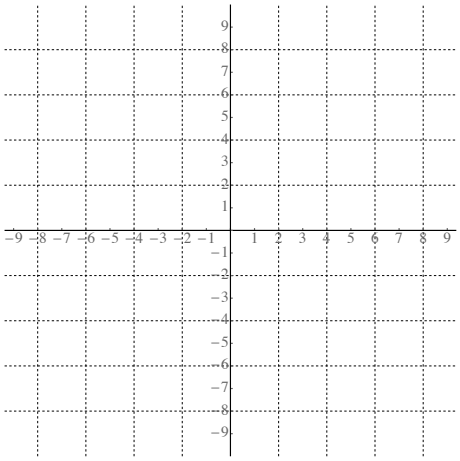


What are the asymptotes of this function?

3. Graph using transformations $f(x) = \log_3(\frac{x}{2} + 2)$

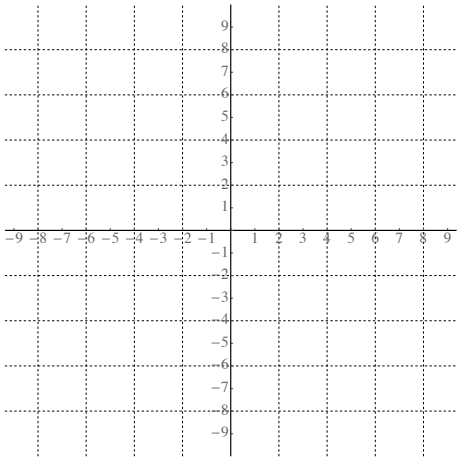
(i) parent function:

y=



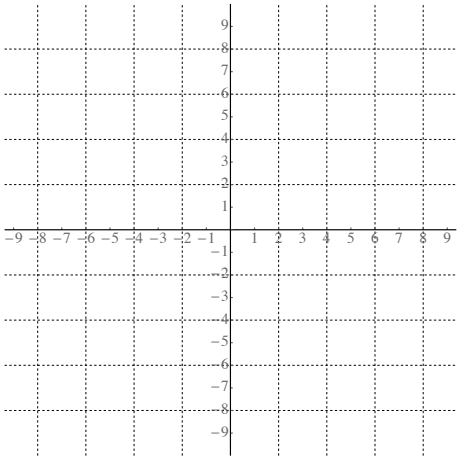
(ii) transformation:

y=



(iii) transformation:

y=



4. Find the domain of $f(x) = \log_3(\frac{x}{2} + 2)$. [Could we do this without the graph?]

5. Find the domain of $f(x) = \log(3x + 12)$.

6. Find the domain of $f(x) = \ln(\frac{x-2}{x^2+5x})$.