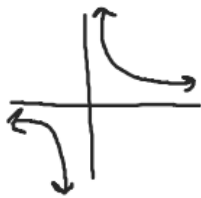


$$f(x) = \frac{1}{x}$$

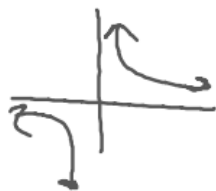


$$f(x) = \frac{1}{x-2}$$



$$f(x) = \frac{3}{x} = 3\left(\frac{1}{x}\right)$$

$$\frac{1}{x}$$



Describe how the graph of the given function can be obtained by transforming the graph of the reciprocal/inverse function. Identify the horizontal and vertical asymptotes and use limits to describe the corresponding behavior. Sketch the graph of the function.

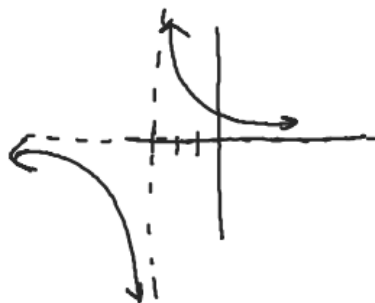
$$\text{V.A. } x = -3$$

$$\text{a) } f(x) = \frac{2}{x+3}$$

$$\text{H.A. } y = 0$$

$$\frac{1}{x}$$

Vertical Stretch by factor of 2



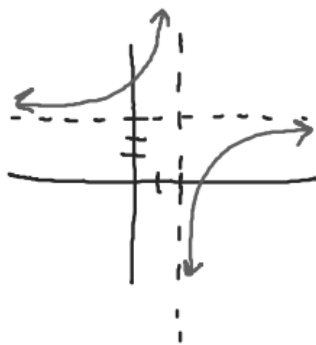
$$\lim_{x \rightarrow -3^-} f(x) = \frac{2}{-4+3} = -\infty$$

$$\lim_{x \rightarrow -3^+} f(x) = \infty$$

$$\text{b) } f(x) = \frac{3x-7}{x-2}$$

$$\text{V.A. } x = 2$$

$$\text{H.A. } y = 3$$



Right 2

Up 3

Reflect over x-axis

Reflection over x-axis

$$3 + \frac{-1}{x-2}$$

$$\ominus \frac{1}{x-2} \oplus 3$$

Right 2

$$\lim_{x \rightarrow 2^-} f(x) = \infty$$

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