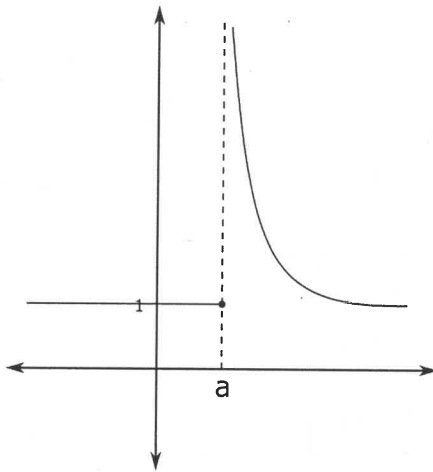


For full credit, you must show all work and circle your final answer.

1 Use the following picture to determine $\lim_{x \rightarrow a} f(x)$ and $f(a)$.



$$f(a) = 1$$

$$\lim_{x \rightarrow a} f(x) \text{ DNE}$$

2 Determine the following limits.

$$\text{a) } \lim_{x \rightarrow \infty} \frac{x^2 + 2x + 1}{x^3 + 5x^2 + x + 2} = 0$$

by limit rules for
rational functions

$$\text{b) } \lim_{x \rightarrow \infty} \frac{x^2 - 1}{x + 1} = \infty$$

3 Determine for which values the following function is discontinuous.

$$f(x) = \frac{1}{(x-2)(x+3)}$$

$$x = 2 \quad x = -3$$

since rational
functions are discont.
when the denominator
is zero