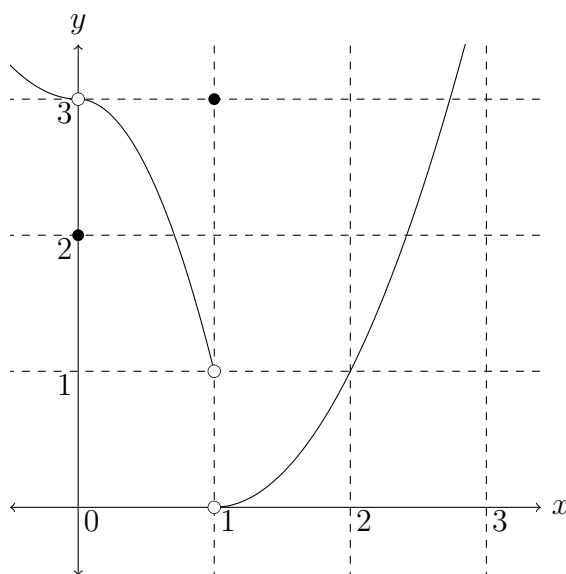

The Limit of a Function

Solutions should show all of your work, not just a single final answer.

1. The graph of $y = f(x)$ is below. Compute each value or explain why it doesn't exist.



- | | | | |
|-------------------------------------|-------------------------------------|-----------------------------------|------------|
| (a) $\lim_{x \rightarrow 0^-} f(x)$ | (b) $\lim_{x \rightarrow 0^+} f(x)$ | (c) $\lim_{x \rightarrow 0} f(x)$ | (d) $f(0)$ |
| (e) $\lim_{x \rightarrow 1^-} f(x)$ | (f) $\lim_{x \rightarrow 1^+} f(x)$ | (g) $\lim_{x \rightarrow 1} f(x)$ | (h) $f(1)$ |
| (i) $\lim_{x \rightarrow 2^-} f(x)$ | (j) $\lim_{x \rightarrow 2^+} f(x)$ | (k) $\lim_{x \rightarrow 2} f(x)$ | (l) $f(2)$ |

2. Determine whether the following limits are finite, ∞ , or $-\infty$. If the limit does not exist for any other reason, write DNE with a justification.

(a) $\lim_{x \rightarrow 1} \frac{\sqrt{x}}{2(x-1)^2}$	(b) $\lim_{x \rightarrow 1^+} \frac{x-2}{x-1}$	(c) $\lim_{x \rightarrow 0} \frac{1}{x} - \frac{1}{x^2}$
--	--	--

3. T/F (with justification) The line $x = 1$ is a vertical asymptote of the graph of $y = \frac{x^2 - 1}{x^2 - 2x + 1}$.
4. T/F (with justification) The line $x = 1$ is a vertical asymptote of the graph of $y = \frac{x^2 - 2x + 1}{x^2 - 1}$.