Limit of a Function at a Value (Briggs, Section 2.2) and Continuity (Briggs, Section 2.6)

We write $\lim_{x\to c} f(x) = L$ to indicate "As $x \to c$, then $f(x) \to L$"

If $\lim_{x\to c} f(x)$ exists and equals L, then we must have $\lim_{x\to c^-} f(x) = L$ and $\lim_{x\to c^+} f(x) = L$ (from both sides)

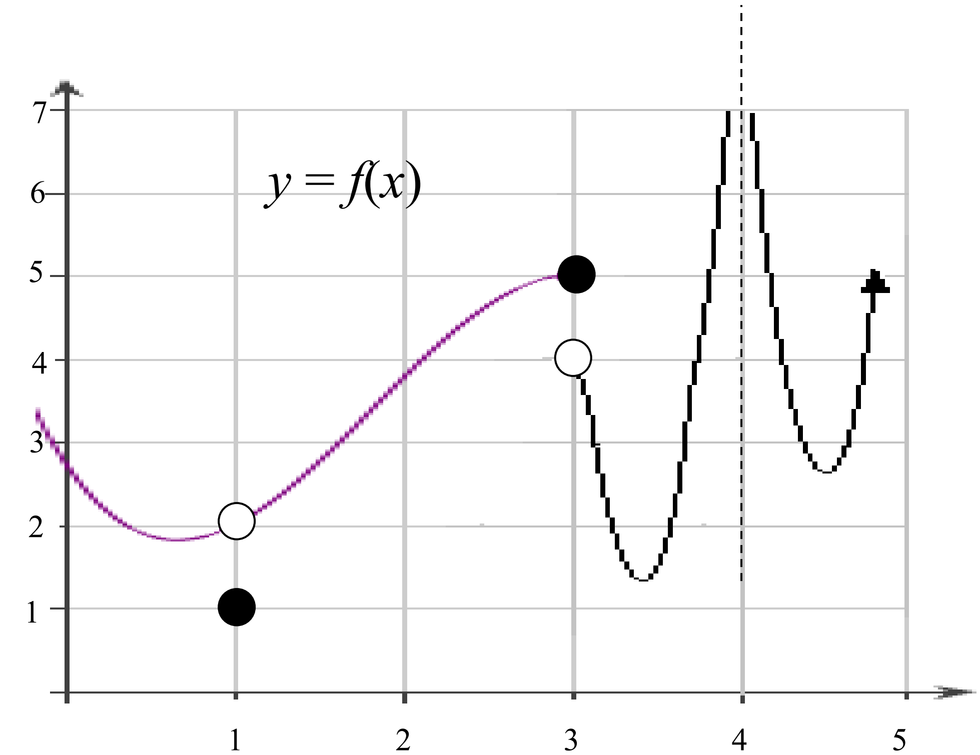
For the graph of $f(x)$ shown, report the following, or, it does not exist, write DNE.

1. **a.** $\lim_{x\to 1^-} f(x) = \square$

$\lim_{x\to 1^+} f(x) = \square$

$\lim_{x\to 1} f(x) = \square$

$f(1) = \square$



b. $\lim_{x\to 3^-} f(x) = \square$

$\lim_{x\to 3^+} f(x) = \square$

$\lim_{x\to 3} f(x) = \square$

$f(3) = \square$

b. $\lim_{x\to 4^-} f(x) = \square$

$\lim_{x\to 4^+} f(x) = \square$

$\lim_{x\to 4} f(x) = \square$

$f(4) = \square$

2. A function $f(x)$ is continuous at $x = c$ if these three conditions are met.

1. $f(c)$ is defined.
2. $\lim_{x\to c} f(x)$ exists.
3. $\lim_{x\to c} f(x) = f(c)$

For which values of x is the function *discontinuous*? $x =$ ________________