

$$\begin{aligned} \text{(a)} \quad \lim_{x \rightarrow 1^-} f(x) &= \lim_{x \rightarrow 1^-} x^2 \\ &= (1)^2 \\ &= \boxed{1} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad \lim_{x \rightarrow 1^+} f(x) &= \lim_{x \rightarrow 1^+} \sqrt{x} \\ &= \sqrt{1} \\ &= \boxed{1} \end{aligned}$$

$$\text{(c)} \quad \text{Since } \lim_{x \rightarrow 1^-} f(x) = \lim_{x \rightarrow 1^+} f(x) = 1,$$

$$\lim_{x \rightarrow 1} f(x) = \boxed{1}$$

$$\text{(d)} \quad f(1) = \sqrt{1} = 1$$

$$\text{Since } \lim_{x \rightarrow 1} f(x) = f(1),$$

$f(x)$ is continuous at $x=1$.