

8.  $f(x) = \begin{cases} x & \text{if } x < -1 \\ x^2 & \text{if } x \geq -1 \end{cases}$  is continuous everywhere on the real line except at  $x = -1$  where it is right continuous, but not left continuous.

$$\begin{aligned} \lim_{x \rightarrow -1-} f(x) &= \lim_{x \rightarrow -1-} x = -1 \neq 1 \\ &= f(-1) = \lim_{x \rightarrow -1+} x^2 = \lim_{x \rightarrow -1+} f(x). \end{aligned}$$