

1. (a) $\lim_{x \rightarrow 4^+} f(x) = 3$
 (b) $\lim_{x \rightarrow 4^-} f(x) = 3$
 (c) $\lim_{x \rightarrow 4} f(x) = 3$
 (d) $\lim_{x \rightarrow -1^+} f(x) = 2$
 (e) $\lim_{x \rightarrow -1^-} f(x) = -2$
 (f) $\lim_{x \rightarrow -1} f(x) \nexists$
 (g) $f(-1) = 2$
 (h) $f(a)$ is not always the same as $\lim_{x \rightarrow a} f(x)$
2. (a) $\lim_{x \rightarrow 4^+} f(x) = 6$
 (b) $\lim_{x \rightarrow 4^-} f(x) = 2$
 (c) $\lim_{x \rightarrow 4} f(x) \nexists$
 (d) $f(4) = 4$
 (e) $\lim_{x \rightarrow -5^+} f(x) = 0$
 (f) $\lim_{x \rightarrow -5^-} f(x) \nexists$
 (g) $\lim_{x \rightarrow -5} f(x) \nexists$
 (h) $f(-5) = 0$
3. (a) $\lim_{x \rightarrow 0^-} f(x) = 1$
 (b) $\lim_{x \rightarrow 0^+} f(x) = 1$
 (c) $\lim_{x \rightarrow 0} f(x) = 1$
 (d) $f(0) = 1$
4. $\lim_{x \rightarrow 1} g(x) = \frac{1}{3}$
5. $\lim_{x \rightarrow 0} f(x) = \frac{1}{2}$
6. $\lim_{x \rightarrow 5^+} \frac{1}{x-5} = +\infty$ Same as $\nexists$ only more specific.
7. $\lim_{x \rightarrow 3} \frac{1}{(x-3)^8} \nexists$ Note: $\lim_{x \rightarrow 3^+} \frac{1}{(x-3)^8} = +\infty$ and $\lim_{x \rightarrow 3^-} \frac{1}{(x-3)^8} = +\infty$