Problems - 2.3/2.4 - One Sided and Infinite Limits

(3) For the function $f(x) = \frac{|x|}{x}$, find the limit at $x = 0$ from the left and right, and determine if the function is continuous at 0.

(6) Evaluate the limit

$$\lim_{x \to 1^+} \frac{(x-1)}{\sqrt{x^2 - 1}}$$

(8) Evaluate the limit

$$\lim_{x \to +\infty} \frac{(x^2 + 1)}{x^{\frac{3}{2}}}$$

(11) Prove Theorem 2.14:

$$\lim_{x \to \infty} \frac{1}{x} = 0$$