Exercise 19

Find the limit.

$$\lim_{x \to 0^+} \tan^{-1}(1/x)$$

Solution

Since the inverse tangent function is continuous, the limit can be brought inside.

$$\lim_{x \to 0^+} \tan^{-1}\left(\frac{1}{x}\right) = \tan^{-1}\left(\lim_{x \to 0^+} \frac{1}{x}\right)$$

$$= \tan^{-1}\left(\frac{1}{0^+}\right)$$

$$= \tan^{-1}(+\infty)$$

$$= \frac{\pi}{2}$$