

89.

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\sin(x) - \cos(x)}{1 - \lg(x)} = \frac{1 - 0}{1 - \infty} = \frac{1}{-\infty} = 0$$

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\sin(x) - \cos(x)}{1 - \lg(x)} = \lim_{x \rightarrow \frac{\pi}{2}} \frac{\sin(x) - \cos(x)}{1 - \frac{\sin(x)}{\cos(x)}} = \lim_{x \rightarrow \frac{\pi}{2}} \frac{\sin(x) - \cos(x)}{\frac{\cos(x) - \sin(x)}{\cos(x)}}$$

$$= \lim_{x \rightarrow \frac{\pi}{2}} \frac{\cos(x) \cdot (\sin(x) - \cos(x))}{-(-\cos(x) \cdot \sin(x))} = -\cos(x) = -\cos \frac{\pi}{2} = 0$$