

$$25. \lim_{x \rightarrow \pi} \frac{\sin x}{x^2 - \pi^2} \stackrel{H}{=} \lim_{x \rightarrow \pi} \frac{\cos x}{2x} = -\frac{1}{2\pi}$$

$$26. \lim_{x \rightarrow 0} \frac{e^{ax} - e^{bx}}{x} \stackrel{H}{=} \lim_{x \rightarrow 0} \frac{ae^{ax} - be^{bx}}{1} = a - b$$

$$27. \lim_{x \rightarrow \infty} \frac{\ln(\ln x)}{\ln x} \stackrel{H}{=} \lim_{x \rightarrow \infty} \frac{(1/\ln x)(1/x)}{1/x} = \lim_{x \rightarrow \infty} \frac{1}{\ln x} = 0$$

$$28. \lim_{x \rightarrow 0} \frac{1 + \sin x - \cos x}{1 - \sin x - \cos x} \stackrel{H}{=} \lim_{x \rightarrow 0} \frac{\cos x + \sin x}{-\cos x + \sin x} = \frac{1 + 0}{-1 + 0} = -1$$

$$29. \lim_{x \rightarrow 0} \frac{\ln(1-x) + x + \frac{1}{2}x^2}{x^3} \stackrel{H}{=} \lim_{x \rightarrow 0} \frac{-\frac{1}{1-x} + 1 + x}{3x^2} \stackrel{H}{=} \lim_{x \rightarrow 0} \frac{-\frac{1}{(1-x)^2} + 1}{6x} \stackrel{H}{=} \lim_{x \rightarrow 0} \frac{-\frac{2}{(1-x)^3}}{6} = -\frac{2}{6} = -\frac{1}{3}$$