

Compute the limits.

$$a) \lim_{x \rightarrow 0} \frac{\sin^2 2x}{x^2}$$

$$b) \lim_{x \rightarrow 0} \frac{1 - \cos 3x}{x^2}$$

$$c) \lim_{x \rightarrow 0} \frac{x}{1 - \sec x}$$

$$d) \lim_{x \rightarrow 0} \frac{1 + \cot^2 3x}{4x^2}$$

$$e) \lim_{x \rightarrow \frac{\pi}{6}} \left[1 - \sec \left(x + \frac{\pi}{3} \right) \right] \left(x - \frac{\pi}{6} \right)^2$$

$$f) \lim_{x \rightarrow \frac{\pi}{2}} \frac{\cos x}{2x - \pi}$$