

$$1. \quad \frac{0}{0} \text{ L'H } \left( \frac{x}{\tan x} \right) \rightarrow \frac{1}{\sec^2 x} \rightarrow \cos^2 x \rightarrow \cos^2(1) = \boxed{1}$$

$$2. \quad \frac{\infty}{\infty} \quad f(x) = \frac{x+8x^2}{12x^2+5x} \quad (x+8x^2) \rightarrow \infty \quad \frac{\infty}{\infty} \text{ L'H } \frac{1+16x}{24x+5}$$

$$\frac{1+16x \rightarrow \infty}{24x+5 \rightarrow \infty} \quad \frac{\infty}{\infty} \text{ L'H } \frac{16}{24} \rightarrow \frac{2}{3}$$

$$\begin{array}{l} (x+8x^2) \rightarrow \infty \quad \frac{\infty}{\infty} \text{ L'H } \frac{1+16x}{24x+5} \quad (1+16x) \rightarrow \infty \quad \frac{-\infty}{-\infty} \text{ L'H} \\ (12x^2+5x) \rightarrow \infty \quad \frac{\infty}{\infty} \text{ L'H } \frac{16}{24} \end{array}$$

$$16/24 \rightarrow \frac{2}{3}$$

H.A. at  $y = \frac{2}{3}$