$$\lim_{x\to 0} \frac{\sin(x)-x}{\tan(x)-x} = \lim_{x\to 0} \frac{x-\frac{x^3}{6}-x}{x+\frac{x^3}{3}-x}$$

$$= \lim_{x\to 0} -\frac{x^3}{6} \Big/ \frac{x^3}{3} = -\frac{1}{2}$$

4). $\lim_{x\to 0} \frac{\cos(x)-e^{x^2}}{x\tan(x)-x^2}$ on fait le D.L à l'ordre 1 :

$\cos(x) = 1$; $\tan(x) = x$; $e^{x^2} = 1+x^2$

$$\lim_{x\to 0} \frac{\cos(x)-e^{x^2}}{x\tan(x)-x^2} = \lim_{x\to 0} \frac{1-(1+x^2)}{x-x^2} = \lim_{x\to 0} \frac{x^2}{x-x^2} = -\infty$$