Limits

$\lim_{x\to 0} \frac{\sin(ax)}{x} = \lim_{x\to 0} \frac{a.\sin(ax)}{ax} =$

$= a \cdot \lim_{x\to 0} \frac{\sin(ax)}{ax} = a.1 = a$

$\lim_{x\to 0} \frac{\sin(ax)}{3x} = \frac{1}{3} \lim_{x\to 0} \frac{\sin(ax)}{x} =$

$= \frac{1}{3} \lim_{x\to 0} \frac{a.\sin(ax)}{ax} = \frac{a}{3} \lim_{x\to 0} \frac{\sin(ax)}{ax} = \frac{a}{3} . 1 = \frac{a}{3}$

$\lim_{x\to 0} \frac{x-\sin x}{x} = \lim_{x\to 0} (1 - \frac{\sin x}{x})$

$1 - \lim_{x\to 0} \frac{\sin x}{x} = 1 - 1 = 0$

L'opital rule

$\lim_{x\to 0} \frac{(x-sinx)^1)}{x^1} = \lim_{x\to 0} \frac{1-\cos x}{1} = \frac{1-1}{1} = \frac{0}{1} = 0$