1. Evaluate the following limits

$$(a)\ \lim_{x\to 0}\frac{\sin(12x)}{5x} \qquad (c)\ \lim_{x\to 0}\frac{\cos(3x)}{x}$$

$$(b)\ \lim_{x\to \infty}\frac{e^x}{x^2+2x} \qquad (d)\ \lim_{x\to \infty} x\,e^{-x}$$

Remember that to apply l'Hopital's rule you must check that the limit is in indeterminate form!

2. Determine if the function has horizontal asymptotes. If so, what are they?

$$(a)\ \ f(x)=\frac{e^x}{x^2+2x} \qquad (b)\ \ g(x)=x\,e^{-x}$$