Punto 1: Para que sean consistentes se debe obtener la derivada real de la función al usar el operador.

$$f'(x) = \frac{-f(x+2h)+4f(x+h)-3f(x)}{2h}$$ Operador 1 $\quad f(x)=x^2$ función 1

$$f''(x) = \frac{f(x+h)-2f(x)+f(x-h)}{h^2}$$ Operador 2 $\quad f(x)=\sin x$ función 2

- La función 1 es consistente con el operador 1:

$$\lim_{h\to 0} \frac{-(x+2h)^2+4(x+h)^2-3x^2}{2h} = \lim_{h\to 0} \frac{-(x^2+4xh+4h^2)+4(x^2+2xh+h^2)-3x^2}{2h}$$

$$\lim_{h\to 0} \frac{-\cancel{x^2}-4xh-\cancel{4h^2}+\cancel{4x^2}+8xh+\cancel{4h^2}-\cancel{3x^2}}{2h} = \lim_{h\to 0} \frac{\overset{2}{\cancel{4}}x\cancel{h}}{\underset{1}{\cancel{2h}}} = 2x$$

- La función 1 es consistente con el operador 2:

$$\lim_{h\to 0} \frac{(x+h)^2-2x^2+(x-h)^2}{h^2} = \lim_{h\to 0} \frac{\cancel{x^2}+\cancel{2xh}+h^2-\cancel{2x^2}+\cancel{x^2}-\cancel{2xh}+h^2}{h^2} = \lim_{h\to 0} \frac{2\cancel{h^2}}{\cancel{h^2}} = 2$$

- La función 2 es consistente con el operador 1:

$$\lim_{h\to 0} \frac{-\sin(x+2h)+4\sin(x+h)-3\sin x}{2h} = \lim_{h\to 0} \frac{-\sin x+4\sin x-3\sin x}{2h} = \lim_{h\to 0} \frac{-4\sin x+4\sin x}{2h} = \text{"}\frac{0}{0}\text{"}$$ L'Hopital

$$\lim_{h\to 0} \frac{-\cos(x+2h)2+4\cos(x+h)}{2} = \lim_{h\to 0} \frac{-2\cos x+4\cos x}{2} = \lim_{h\to 0} \frac{\cancel{2}\cos x}{\cancel{2}} = \cos x$$

- La función 2 es consistente con el operador 2:

$$\lim_{h\to 0} \frac{\sin(x+h)-2\sin x+\sin(x-h)}{h^2} = \lim_{h\to 0} \frac{\sin x-2\sin x+\sin x}{h^2} = \text{"}\frac{0}{0}\text{"}$$ L'Hopital

$$\lim_{h\to 0} \frac{\cos(x+h)-\cos(x-h)}{2h} = \text{"}\frac{0}{0}\text{"}$$ L'Hopital

$$\lim_{h\to 0} \frac{-\sin(x+h)-\sin(x-h)}{2} = \frac{-\cancel{2}\sin x}{\cancel{2}} = -\sin x$$