

c) Sean $f + g$ derivable en $x = a$

$$(f + g)' = f' + g'$$

$$(f + g)' = \lim_{h \rightarrow 0} \frac{f(a+h) + g(a+h) - (f(a) + g(a))}{h}$$

$$= \lim_{h \rightarrow 0} \frac{f(a+h) + g(a+h) - f(a) - g(a)}{h}$$

$$= \lim_{h \rightarrow 0} \frac{f(a+h) - f(a) + g(a+h) - g(a)}{h}$$

$$= \lim_{h \rightarrow 0} \left(\frac{f(a+h) - f(a)}{h} + \frac{g(a+h) - g(a)}{h} \right)$$

$$\begin{aligned} &= \lim_{h \rightarrow 0} \left(\frac{f(a+h) - f(a)}{h} \right) + \lim_{h \rightarrow 0} \left(\frac{g(a+h) - g(a)}{h} \right) \end{aligned}$$

$$= f'(a) + g'(a)$$

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