

Es. 1.-

5.3

$$f: x \in ]-\infty, +\infty[ \longrightarrow f(x) = x$$

$$\forall x_0 \in ]-\infty, +\infty[, \quad \lim_{x \rightarrow x_0} \frac{f(x) - f(x_0)}{x - x_0} = \lim_{x \rightarrow x_0} \frac{x - x_0}{x - x_0} = 1$$

□

Es. 2.-

$$g: x \in ]-\infty, +\infty[ \longrightarrow g(x) = |x|$$

$$g'_-(0) = \lim_{x \rightarrow 0^-} \frac{g(x) - g(0)}{x - 0} = \lim_{x \rightarrow 0^-} \frac{|x|}{x} = -1$$

$$g'_+(0) = \lim_{x \rightarrow 0^+} \frac{|x|}{x} = +1$$

□

Es. 3.-

$$h: x \in ]-\infty, +\infty[ \longrightarrow h(x) = \begin{cases} x \sin \frac{1}{x} & \text{SE } x \neq 0 \\ 0 & \text{SE } x = 0 \end{cases}$$

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

$$\underline{h'_-(0)} = -1 \quad ; \quad \overline{h'_-(0)} = 1$$

$$\underline{h'_+(0)} = -1 \quad ; \quad \overline{h'_+(0)} = 1$$

□