

$$\lim_{x \rightarrow 2} \frac{x^2 + 5}{x + 1} = \frac{9}{3} = 3 \quad \text{ج}$$

$$\lim_{x \rightarrow 2} \frac{x^2 + 5}{x + 1} = \frac{9 + \Delta}{3 + \Delta} = 3 \quad \text{الف}$$

$$\lim_{x \rightarrow 2} \frac{x^2 + 5}{x + 1} = \frac{9^+ + \Delta}{3^+ + \Delta} = 3 \quad \text{الف}$$

$$\lim_{x \rightarrow 0} \frac{x^2 + 5}{x^2} \Rightarrow \text{حد ندارد} \quad x \rightarrow 0^+ \Rightarrow \frac{0^+ + 5}{0^+} = \frac{5}{0} = +\infty \quad \text{ب}$$

$$\lim_{x \rightarrow 2} [f(x) - 2] = 1 \quad \text{ج}$$

$$\lim_{x \rightarrow 2} [f(x) - 2] = [12 - 2] = 10 \quad \text{الف}$$

$$\lim_{x \rightarrow 2} [f(x) - 2] = f(2) - 2 = 12 - 2 = 10 \quad \text{الف}$$

$$\lim_{x \rightarrow 2^+} [f(x) - 2] = 1 \quad \text{ج}$$

$$\lim_{x \rightarrow 2^+} \left[\frac{x^2 + 1}{x} \right] = \left[\frac{9 + 1}{3} \right] = \left[\frac{10}{3} \right] = 3 \quad \text{الف}$$

$$\lim_{x \rightarrow 2^+} \left[\frac{x^2 + 1}{x} \right] \Rightarrow \lim_{x \rightarrow 2^+} \frac{x^2 + 1}{x} = \Delta \Rightarrow \left[\lim_{x \rightarrow 2^+} \frac{x^2 + 1}{x} \right] = \Delta \quad \text{ج}$$

$$\lim_{x \rightarrow 2} \frac{x - 1}{x^2 - 4x + 4} = \frac{x - 1}{(x - 2)^2} \quad \begin{matrix} x \rightarrow 2^+ \rightarrow \frac{1}{0^+} = +\infty \\ x \rightarrow 2^- \rightarrow \frac{1}{0^+} = +\infty \end{matrix} \quad \text{الف}$$

$$\lim_{x \rightarrow 1} \left[\frac{-1}{x^2} \right] = \left[\frac{-1}{(1/4)^2} \right] = -16 \quad \text{الف}$$

$$\lim_{x \rightarrow 2} [x^2 - 1] = [4 - 1] = 3 \quad \text{ج}$$

$$\lim_{x \rightarrow 0} [x^2 - 4x^2 + 3] \quad \begin{matrix} 0^+ \rightarrow [3^+] = 3 \\ 0^- \rightarrow [3^-] = 3 \end{matrix} \quad \text{ج}$$

$$\lim_{x \rightarrow 0} [x^2 - 4x^2 + 3] = [3] = 3 \quad \text{الف}$$

$$\lim_{x \rightarrow \pi} \frac{|\sin x|}{\sin 2x} \quad \begin{matrix} x \rightarrow \pi^+ \rightarrow \frac{-1}{2\sin \pi \cos \pi} = \frac{-1}{2 \cdot 0 \cdot (-1)} = \frac{1}{2} \\ x \rightarrow \pi^- \rightarrow \frac{+1}{2\sin \pi \cos \pi} = \frac{+1}{2 \cdot 0 \cdot (-1)} = \frac{1}{2} \end{matrix} \quad \text{الف}$$

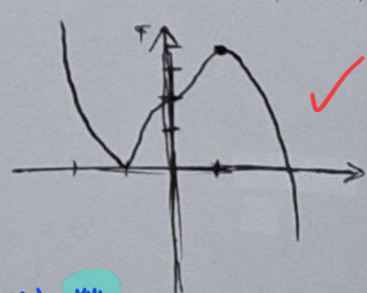
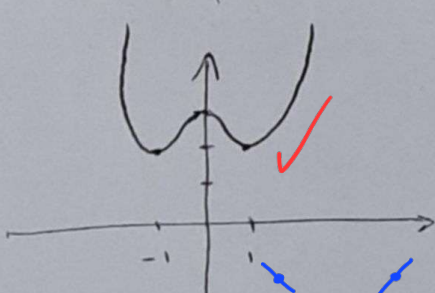
$$\lim_{x \rightarrow 2} \frac{|x^2 - 1|}{x^2 - 1} \quad \begin{matrix} x \rightarrow 2^+ \rightarrow \frac{(x-1)(x^2 + x + 1)}{(x-1)(x+1)} = \frac{x^2 + x + 1}{x + 1} = 3 \\ x \rightarrow 2^- \rightarrow \frac{-(x-1)(x^2 + x + 1)}{(x-1)(x+1)} = \frac{-(x^2 + x + 1)}{(x+1)} = -3 \end{matrix} \quad \text{الف}$$

$$\lim_{x \rightarrow 0} \sqrt{x - 2\sqrt{x}} \quad \begin{matrix} 0^+ \rightarrow \sqrt{0^+ - 2\sqrt{0^+}} = \sqrt{0^+} = 0^+ \\ 0^- \rightarrow \sqrt{0^- + 2\sqrt{0^-}} = \sqrt{0^-} = 0^- \end{matrix} \quad \text{الف}$$

$$\lim_{x \rightarrow 2} \frac{x^2 - [x]}{x - [x]} \quad \begin{matrix} x \rightarrow 2^+ \rightarrow \frac{x^2 - x}{x - x} = \frac{x^2 - x}{0^+} = \frac{x(x-1)}{0^+} = +\infty \\ x \rightarrow 2^- \rightarrow \frac{x^2 - x}{x - x} = \frac{x^2 - x}{0^-} = \frac{x(x-1)}{0^-} = -\infty \end{matrix} \quad \text{الف}$$

$$y = x^2 - 2x^2 + 3 \quad \begin{matrix} y' = 2x - 4x = -2x \end{matrix} \quad \text{الف}$$

$$y = \Delta x^2 - 2x\Delta + 3 \quad \begin{matrix} y' = -1\Delta x^2 + 1\Delta x \end{matrix} \quad \text{الف}$$



$$\lim_{x \rightarrow -2} [-x^2] - [\Delta x] = \begin{cases} \lim_{x \rightarrow (-2)^+} [-x^2] - [\Delta x] = 4 - (-1) = 5 \\ \lim_{x \rightarrow (-2)^-} [-x^2] - [\Delta x] = 4 - (-1) = 5 \end{cases}$$

سوال 5