

بزرگم صبر

نکته

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$$\text{الف) } \left[\lim_{x \rightarrow p^+} f(x) - p \right] = \textcircled{\infty}$$

$$\text{الف) } \lim_{x \rightarrow p^+} f(x) - p = f(p) - p = \textcircled{\infty} \textcircled{1}$$

$$\text{ب) } \left[\lim_{x \rightarrow p^-} f(x) - p \right] = \textcircled{\infty}$$

$$\text{ب) } \lim_{x \rightarrow p^-} f(x) - p = f(p) - p = \textcircled{\infty}$$

$$\text{الف) } \lim_{x \rightarrow p} \frac{f(x) - p}{x - p}$$

$$\text{الف) } \lim_{x \rightarrow p^+} f(x) - p = \underbrace{f(p)}_{\wedge} - p = \textcircled{\infty} \textcircled{2}$$

$$\left\{ \begin{array}{l} p^+ \rightarrow \frac{0}{0^+} = \textcircled{+\infty} \\ p^- \rightarrow \frac{0}{0^-} = \textcircled{-\infty} \end{array} \right.$$

$$\text{ب) } \lim_{x \rightarrow p^-} f(x) - p = f(p) - p = \textcircled{1}$$

$$\text{ب) } \lim_{x \rightarrow p} \frac{f(x) - p}{(x - p)^2}$$

$$\text{الف) } \lim_{x \rightarrow p^+} [f(x) - p] = \textcircled{\infty} \textcircled{3}$$

$$\left\{ \begin{array}{l} p^+ \rightarrow \frac{0}{0^+} = \textcircled{+\infty} \\ p^- \rightarrow \frac{0}{0^+} = \textcircled{+\infty} \end{array} \right.$$

$$\text{ب) } \lim_{x \rightarrow p^-} [f(x) - p] = p$$

$$\text{ب) } \lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3}$$

$$\left\{ \begin{array}{l} 3^+ \rightarrow \frac{0}{0} \rightarrow \text{تن} \\ 3^- \rightarrow \frac{0}{-1} = (-0) \end{array} \right.$$

$$\text{ج) } \lim_{x \rightarrow 3} [x^2] + [-2x]$$

$$\begin{array}{l} x \rightarrow 3 \quad \begin{array}{l} -4 \rightarrow \\ 3 \end{array} \\ \left\{ \begin{array}{l} 3^+ \rightarrow 9 + (-6) = 3 \\ 3^- \rightarrow 9 + (-6) = 3 \end{array} \right. \end{array}$$

$$\text{د) } \lim_{x \rightarrow -4} [-5x] + [2x]$$

$$\begin{array}{l} x \rightarrow -4 \quad \begin{array}{l} 2x \rightarrow \\ -4 \end{array} \\ \left\{ \begin{array}{l} -4^+ \rightarrow 20 + (-8) = 12 \\ -4^- \rightarrow 20 + (-8) = 12 \end{array} \right. \end{array}$$

$$\text{الف) } \lim_{x \rightarrow 3} \frac{x^2 - 9}{\sqrt{x} - 3}$$

$$\left\{ \begin{array}{l} 3^+ \rightarrow \frac{0}{\sqrt{0^+} - 3} = \frac{0}{0^+ - 3} = +\infty \\ 3^- \rightarrow \frac{0}{\sqrt{0^-} - 3} \rightarrow \text{تن} \end{array} \right.$$

$$\text{ب) } \lim_{x \rightarrow 3} \frac{x^2 - 9}{\sqrt{x^2 - 2x + 3}}$$

$$\left\{ \begin{array}{l} 3^+ \rightarrow \frac{0}{\sqrt{0^+} - 0^+} = \frac{0}{0^+} = +\infty \\ 3^- \rightarrow \frac{0}{\sqrt{0^-} - 0^-} = \text{تن} \end{array} \right.$$

$$x^2 - 2x + 3 = (x - 1)(x - 3)$$

$$\begin{array}{c} 1 \quad 3 \\ +0 \quad -0^+ \end{array}$$

$$\text{الف) } \lim_{x \rightarrow 3} \frac{x^2 - 9}{x^2 - 5x + 12}$$

$$\left\{ \begin{array}{l} 3^+ \rightarrow \frac{0}{0^-} = -\infty \\ 3^- \rightarrow \frac{0}{0^+} = +\infty \end{array} \right.$$

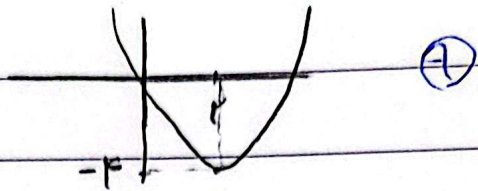
$$x^2 - 5x + 12 = (x - 3)(x - 4)$$

$$\begin{array}{c} 3 \quad 4 \\ +0 \quad -0^+ \end{array}$$

s.a.m

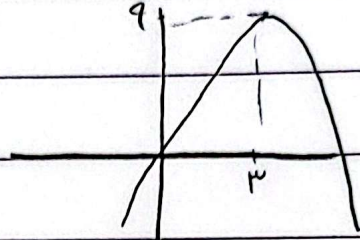
$$\text{a) } \lim_{x \rightarrow r} [x^r - \epsilon \alpha]$$

$$x \rightarrow r = \textcircled{-r}$$



$$\text{b) } \lim_{x \rightarrow r} [9\alpha - x^r]$$

$$x \rightarrow r = \textcircled{+}$$



$$\text{c) } \lim_{x \rightarrow r} \frac{|x-r|}{x^r - r^r + r}$$

$$x \rightarrow r$$

⑩

$$\left\{ \begin{array}{l} r^+ \rightarrow \frac{(x-r)}{(x-1)(x-r)} = \frac{1}{x-1} = \textcircled{1} \\ r^- \rightarrow \frac{-(x-r)}{(x-1)(x-r)} = \textcircled{-1} \end{array} \right.$$

$$\text{d) } \lim_{x \rightarrow 1} \frac{x - [x]}{x^r - 1}$$

$$x \rightarrow 1$$

$$\left\{ \begin{array}{l} 1^+ \rightarrow \frac{(x-1)}{(x+1)(x-1)} = \frac{1}{x+1} = \textcircled{\frac{1}{2}} \\ 1^- \rightarrow \frac{x}{x^r - 1} = \frac{1}{0^-} = \textcircled{-\infty} \end{array} \right.$$