

بزرگم صبر

لیمیت

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نکات مهم

الف)  $\lim_{x \rightarrow p^+} [kx - p] = \text{د}$

الف)  $\lim_{x \rightarrow p^+} kx - p = k(p) - p = \text{د}$  ①

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

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الف)  $\lim_{x \rightarrow p} \frac{kx - p}{x - p}$

الف)  $\lim_{x \rightarrow p^+} k[x] - p = \frac{k(p) - p}{1} = \text{د}$  ②

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

ب)  $\lim_{x \rightarrow p^-} k[x] - p = k(1) - p = \text{د}$

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

الف)  $\lim_{x \rightarrow p^+} [kx - p] = \text{د}$  ③

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

ب)  $\lim_{x \rightarrow p^-} [kx - p] = k$

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

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

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

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

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

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

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

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

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

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

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

$$\left| \begin{array}{c} 1 \quad 3 \\ +0 \quad -0^+ \end{array} \right.$$

$$\text{الف) } \lim_{x \rightarrow 3} \frac{x^2 - 9}{x^2 - 5x + 6}$$

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

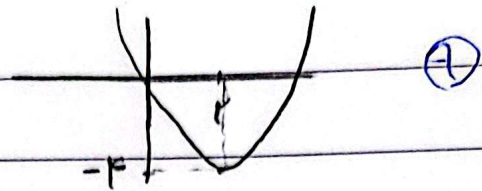
$$x^2 - 5x + 6 = (x-3)(x-2)$$

$$\left| \begin{array}{c} 3 \quad 2 \\ +0 \quad -0^+ \end{array} \right.$$

s.a.m

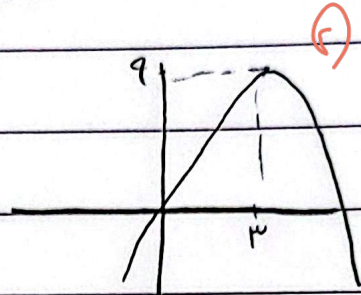
$$a) \lim_{n \rightarrow r} [x^n - \epsilon n]$$

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



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

$$n \rightarrow r = \textcircled{1}$$



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

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

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

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