

$$\lim_{x \rightarrow 2^+} \varepsilon x - 3 = 2 \times \varepsilon - 3 = 0 \quad \checkmark$$

(الف) (2)

$$\lim_{x \rightarrow 2} \varepsilon x - 3 = 2 \times \varepsilon - 3 = 0 \quad \checkmark$$

ب)

$$\lim_{x \rightarrow 1^+} \varepsilon [x] - 3 = 1 - 3 = 0 \quad \checkmark$$

(الف) (2)

$$[2^+] = 2$$

$$\lim_{x \rightarrow 1} \varepsilon [x] - 3 = 1 - 3 = -2 \quad \checkmark$$

ب)

$$[1^-] = 1$$

$$\lim_{x \rightarrow 2^+} [\varepsilon x - 3] = [0^+] = 0 \quad \checkmark$$

(الف) (3)

$$\lim_{x \rightarrow 2} [\varepsilon x - 3] = [0^-] = -1 \quad \checkmark$$

ب)

$$[\lim_{x \rightarrow 2^+} \varepsilon x - 3] = [0] = 0 \quad \checkmark$$

(الف) (4) (2)

$$[\lim_{x \rightarrow 2} \varepsilon x - 3] = [0] = 0 \quad \checkmark$$

$$\lim_{x \rightarrow 3} \frac{\varepsilon x - 3}{x - 3} = \frac{\varepsilon \cdot 3 - 3}{3^+ - 3} = \frac{0}{0^+} = +\infty \quad \checkmark$$

(الف) (5)

$$\frac{0}{0^-} = -\infty \quad \checkmark$$

(2)

~~$\lim_{x \rightarrow 3} \frac{\varepsilon x - 3}{x - 3} = \frac{0}{0} = \frac{0}{0}$~~


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$(0^-)^+ = 0^+$

$(0^+)^+ = 0^+$

$\lim_{x \rightarrow 3} \frac{\varepsilon x - 3}{(x - 3)^2} = \frac{0}{0^+} = +\infty \quad \checkmark$

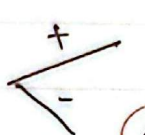
$\lim_{x \rightarrow 3} \frac{2x-3}{\sqrt{x-3}}$  $\frac{2x-3}{\sqrt{x-3}} = \frac{9}{0^+} = +\infty$ (جواب - 2) 2

$\frac{14x}{\sqrt{x-3}} = \frac{42}{\sqrt{0^+}} = \infty$ ∞

$\lim_{x \rightarrow 3} \frac{2x-3}{\sqrt{x^2-12x+9}}$  $\frac{12-3}{\sqrt{0^+}} = +\infty$ ∞ 2

$\frac{9}{\sqrt{0^+}} = \infty$ ∞

$(x-3)(x-1) \Rightarrow \frac{1}{+ \quad - \quad +}$

$\lim_{x \rightarrow 3} \frac{2x-3}{x^2-12x+9}$  $\frac{9}{0^-} = -\infty$ -∞ 2

$\frac{9}{0^+} = +\infty$ ∞

$(x-3)(x-1) \Rightarrow \frac{1}{+ \quad - \quad +}$

$\lim_{x \rightarrow 3} \frac{2x-3}{[x-3]}$ $\frac{9}{[0^+]} = \frac{9}{0^+} = \infty$ ∞ 2

$\frac{9}{[0^-]} = \frac{9}{-0^-} = -\infty$ -∞

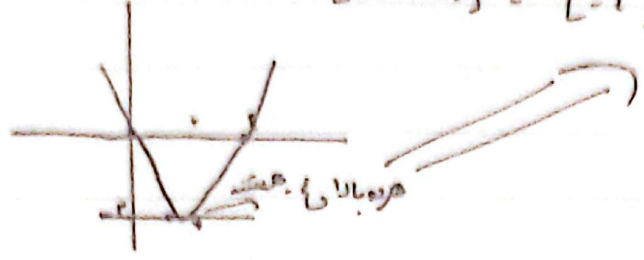
$\lim_{x \rightarrow 3} [3x] + [-2x] = \begin{cases} + & [9^+] + [-6^-] = 9-6=3 \text{ (جواب - 1)} \\ - & [9^-] + [-6^+] = 9-6=3 \end{cases}$ 2

$\lim_{x \rightarrow 7} [-2x] + [2x] = \begin{cases} + & [14^-] + [14^+] = 14-14=0 \\ - & [14^+] + [14^-] = 14-14=0 \end{cases}$ 0

$\lim_{x \rightarrow 2} [x^2 - 4x]$

$\begin{cases} + & [x(x-4)] = [2 \cdot (-2)] = -4 \\ - & [x(x-4)] = [2 \cdot (-2)] = -4 \end{cases}$

الف (2)

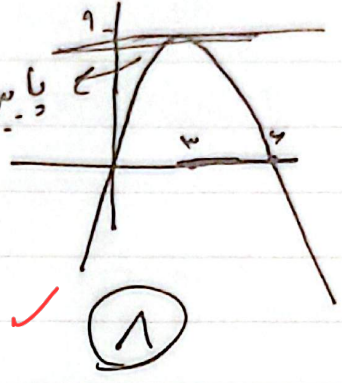


$\lim_{x \rightarrow 2} [4x \cdot x^2]$

با سبب اشتراک در 2

$\begin{cases} + & [9^+] = 9 \\ - & [9^-] = 9 \end{cases}$

الف (1)



$\lim_{x \rightarrow 2} \frac{|x-2|}{x^2 - 3x + 2}$

$\begin{cases} + & \frac{|x^2 - 2|}{(x-1)(x-2)} = \frac{x-2}{(x-1)(x/2)} = \frac{1}{1} = 1 \\ - & \frac{-x+2}{(x-1)(x-2)} = \frac{1}{1-x} = \frac{1}{-1} = -1 \end{cases}$

الف (1)

اول باید تکلیف برآید مشخصه

$\lim_{x \rightarrow 1} \frac{x - [x]}{x^2 - 1}$

$\begin{cases} + & \frac{1 - [1^+]}{1^+ - 1} = \frac{1-1}{0^+} = \frac{0}{0^+} = 0 \\ - & \frac{1 - [1^-]}{1^- - 1} = \frac{1}{0^+} = +\infty \end{cases}$

الف (1)

$\lim_{n \rightarrow 1} \frac{n - [n]}{n^2 - 1}$

$\begin{cases} n \rightarrow 1^+ : \frac{n-1}{(n-1)(n+1)} = \frac{1}{2} \\ n \rightarrow 1^- : \frac{n}{(n-1)(n+1)} = \frac{1}{0^-} = -\infty \end{cases}$