نام و نام خانوادگی: پارسا ایروانی

کلاس یازدهم پسر B - تکلیف شماره ۲۹

۱-
$\lim_{x\to 2^+} \varepsilon x-3 = \varepsilon(2)-3 = 8-3 = 5$ $\quad \lim_{x\to 2^-} \varepsilon x-3 = \varepsilon(2)-3 = 8-3 = 5$ $\Longrightarrow \lim_{x\to 2} \varepsilon x-3 = 5$

۲-
$\lim_{x\to 2^+} \varepsilon[x]-3 = \varepsilon[2^+]-3 = \varepsilon(2)-3 = 8-3 = 5$ $\quad \lim_{x\to 2^-} 4[x]-3 = 4[2^-]-3 = \varepsilon(1)-3 = \varepsilon-3 = 1$

۳-
$\lim_{x\to 2^+} [\varepsilon x-3] = [\varepsilon(2^+)-3] = [5^+] = 5$ (صعودی) $\quad \lim_{x\to 2^-} [\varepsilon x-3] = [\varepsilon(2^-)-3] = [5^-] = 4$ (صعودی)

۴-
$\left[\lim_{x\to 2^+} \varepsilon x-3\right] = [\varepsilon(2)-3] = [5] = 5$ $\quad \left[\lim_{x\to 2^-} \varepsilon x-3\right] = [\varepsilon(2)-3] = [5] = 5$

۵-
$\lim_{x\to 3} \frac{\varepsilon x-3}{x-3}$ شکل‌ابهام $\Rightarrow \lim_{x\to 3^+} \frac{\varepsilon x-3}{x-3} = +\infty$, $\lim_{x\to 3^-} \frac{\varepsilon x-3}{x-3} = -\infty \Rightarrow \lim_{x\to 3} \frac{\varepsilon x-3}{x-3}$ وجود ندارد

$\lim_{x\to 3^+} \frac{\varepsilon x-3}{(x-3)^2} = +\infty$, $\lim_{x\to 3^-} \frac{\varepsilon x-3}{(x-3)^2} = +\infty \Longrightarrow \lim_{x\to 3} \frac{\varepsilon x-3}{(x-3)^2} = +\infty$

۶- وجود ندارد
$\lim_{x\to 3^+} \frac{\varepsilon x-3}{\sqrt{x-3}} = +\infty$ $\quad \lim_{x\to 3^-} \frac{\varepsilon x-3}{\sqrt{x-3}}$ وجود ندارد $\Rightarrow \sqrt{x-3} \Rightarrow x-3 > 0 \Rightarrow x > 3$ $\quad 3^- < 3 < 3^+ \Rightarrow \lim \frac{\varepsilon x-3}{\sqrt{x-3}}$ وجود ندارد

$\lim_{x\to 3^+} \frac{\varepsilon x-3}{\sqrt{x^2-\varepsilon x+3}} \rightsquigarrow \sqrt{x^2-\varepsilon x+3} = \sqrt{(x-3)(x-1)} \Rightarrow (x-3)(x-1) > 0 \Rightarrow$ (وجود ندارد 3^-) $+\,|\,-\,|\,+$ $\Rightarrow \lim_{x\to 3} \frac{\varepsilon x-3}{\sqrt{x^2-\varepsilon x+3}}$ وجود ندارد

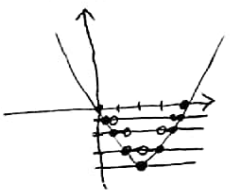
۷-
$\lim_{x\to 3^+} \frac{\varepsilon x-3}{x^2-7x+12} = -\infty$, $\lim_{x\to 3^-} \frac{\varepsilon x-3}{x^2-7x+12} = +\infty \Rightarrow \lim_{x\to 3} \frac{\varepsilon x-3}{x^2-7x+12}$ وجود ندارد

$\lim_{x\to 3^+} \frac{\varepsilon x-3}{[x-3]} = \frac{12-3}{[3^+-3]} = \frac{9}{[0^+]} = \frac{9}{0}$ وجود ندارد $\quad \lim_{x\to 3^-} \frac{\varepsilon x-3}{[x-3]} = \frac{12-3}{[3^--3]} = \frac{9}{[0^-]} = \frac{9}{-1} = -9 \Rightarrow \lim_{x\to 3} \frac{\varepsilon x-3}{[x-3]}$ وجود ندارد

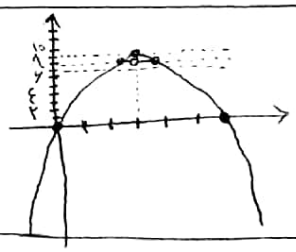
۸-
$\lim_{x\to 3^+} [3x]+[-2x] = [9^+]+[-6^-] = 9-7 = 2$ $\quad \lim_{x\to 3^-} [3x]+[-2x] = [9^-]+[-6^+] = 8-6 = 2 \Rightarrow \lim_{x\to 3} [3x]+[-2x] = 2$

$\lim_{x\to -6^+} [-\varepsilon x]+[2x] = [2\varepsilon^-]+[-12^+] = 23-12 = 11$ $\quad \lim_{x\to -6^-} [-\varepsilon x]+[2x] = [2\varepsilon^+]+[-12^-] = 25-13 = 11 \Rightarrow \lim_{x\to -6} [-\varepsilon x]+[2x] = 11$

۹-
$\lim_{x\to 2} [x^2-\varepsilon x] = -3$



$\lim_{x\to 3} [6x-x^2] = 8$



۱۰-
$\lim_{x\to 2^-} \frac{|x-2|}{x^2-3x+2} = \frac{-x+2}{x^2-3x+2} \overset{\frac{0}{0}\ \text{H.O.P}}{=} \frac{-1}{2x-3} = \frac{-1}{\varepsilon-3} = -1$

$\lim_{x\to 2^+} \frac{|x-2|}{x^2-3x+2} = \frac{x-2}{x^2-3x+2} \overset{\frac{0}{0}\ \text{H.O.P}}{=} \frac{1}{2x-3} = \frac{1}{\varepsilon-3} = 1$

$\Rightarrow \lim_{x\to 2} \frac{|x-2|}{x^2-3x+2}$ وجود ندارد

$\lim_{x\to 1^-} \frac{x-[x]}{x^2-1} = \frac{1^-}{1^--1} = \frac{1^-}{0^-} = -\infty$

$\lim_{x\to 1^+} \frac{x-[x]}{x^2-1} = \frac{1^+-1}{(1^+)^2-1} = \frac{0^+}{(0^+)^2} = +\infty$

$\Rightarrow \lim_{x\to 1} \frac{x-[x]}{x^2-1}$ وجود ندارد