نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲۹ ..... کلاس ..... 13 .....

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۱ (۲)

الف) $\lim_{x \to 2^+} f(x) - 2 = 1 - 2 = 0$ ✓

ب) $\lim_{x \to 2^-} f(x) - 2 = 1 - 2 = 0$ ✓

۲ (۲)

الف) $\lim_{x \to 2^+} f[x] - 2 = f(2) - 2 = 0$ ✓

ب) $\lim_{x \to 2^-} f[x] - 3 = f(1) - 2 = 1$ ✓

۳ (۲)

الف) $\lim_{x \to 2^+} [f(x) - 3] = [\Delta^+] = 0$ ✓

ب) $\lim_{x \to 2^-} [f(x) - 3] = [\bar{\Delta}] = 4$ ✓

۴ (۲)

الف) $\left[\lim_{x \to 2^+} f(x) - 3\right] \Rightarrow \lim_{x \to 2^+} f(x) - 3 = \Delta \to [\Delta] = 0$ ✓

ب) $\left[\lim_{x \to 3^-} f(x) - 2\right] \Rightarrow \lim_{x \to 3^-} f(x) - 2 = \Delta \to [\Delta] = 0$ ✓

۵ (۲)

الف) $\lim_{x \to 3} \frac{f(x) - 2}{x - 3}$

$x \to 3^+ : \frac{f(x) - 2}{0^+} = +\infty$

$x \to 3^- : \frac{f(x) - 2}{x - 3} = \frac{f(x) - 3}{0^-} = \frac{9}{0^-} \to -\infty$

/ ✓

ب) $\lim_{x \to 3^+} \frac{f(x) - 3}{(x - 3)^2} = \frac{9}{0^+} \to +\infty$ ✓

٦ (٢)

(ألف) $\lim_{x\to 3} \frac{x^2-3}{\sqrt{x-3}}$

$x \to 3^+ : \frac{x^2-3}{\sqrt{x-3}} = \frac{9}{\sqrt{0^+}} = +\infty$ ✓

$x \to 3^- : \frac{x^2-3}{\sqrt{x-3}} = \frac{9}{\sqrt{0^-}}$ ✗

(ب) $\lim_{x\to 2} \frac{x^2-3}{\sqrt{x^2-4x+4}}$

$x \to 2^+ : \frac{x^2-3}{\sqrt{x^2-4x+4}} \to +\infty$ ✓

$x \to 2^- : \frac{x^2-3}{\sqrt{x^2-4x+4}} = \frac{x^2-3}{|x-2|}$

x	1		2	
$x-2$	$-$	$\|$	$-$	0	$+$
$\|x-2\|$	$+$	$\|$	$-$	0	$+$

$= \frac{x^2-3}{-(x-2)} \to -\infty$ ✓

٧ (٢)

(ألف) $\lim_{x\to 3} \frac{x^2-3}{x^2-7x+12} = \frac{x^2-3}{(x-3)(x-4)}$

$x \to 3^+ : \frac{6}{0^-} \to -\infty$ ✓

$x \to 3^- : \frac{6}{0^+} \to +\infty$

x	3		4	
$x-4$	$-$	$\|$	$-$	0	$+$

(ب) $\lim_{x\to 2} \frac{x^2-3}{[x-2]}$

$x \to 2^+ : \frac{9}{[0^+]} = \frac{9}{0} = \text{ت ع}$ ✓

$x \to 2^- : \frac{9}{[0^-]} = \frac{9}{-1} = -9$

٨ (٢)

(ألف) $\lim_{x\to 3} [2x] + [-2x]$

$x \to 3^+ \to [6^+] + [-6] = 6 - 6 = 0$

$x \to 3^- \to [6^-] + [-6] = 5 - 6 = -1$ ✓

(ب) $\lim_{x\to 4} [-\frac{1}{2}x] + [\frac{1}{2}x]$

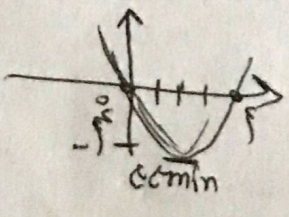
$x \to 4^+ : -2 + 2 = 0$

$x \to 4^- : -2 + 2 = 0$ ✓

٩ (٢)

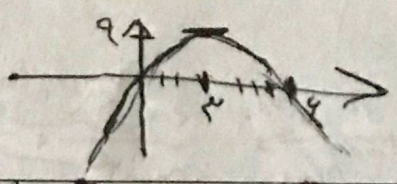
(ألف) $\lim_{x\to 2} [x^2 - 4x]$

$= [-4^+] = -4$ ✓



(ب) $\lim_{x\to 3} [9x - x^3]$

$= [9^-] = 8$ ✓



١٠ (١)

(ألف) $\lim_{x\to 5} \frac{|x-5|}{x^2-6x+5}$

$x \to 5^+ : \frac{x-5}{(x-1)(x-5)} = \frac{1}{x-1} = \frac{1}{4}$

$x \to 5^- : \frac{-(x-5)}{(x-1)(x-5)} = \frac{-1}{x-1} = -\frac{1}{4}$

x	1		5	
$x-5$	$-$	$\|$	$-$	0	$+$
$x-1$	$+$	$\|$	$+$	0	$+$

$\frac{1,2}{0} \to$ غير موجود

(ب) $\lim_{x\to 1} \frac{x-[x]}{x^2-1}$

$x \to 1^+ : \frac{x-1}{(x-1)(x+1)} = \frac{1}{x+1} = \frac{1}{2}$ ✓

$x \to 1^- : \frac{x}{x^2-1} = \frac{1}{0^-} = -\infty$ ✓

$(x-1)(x+1)$

۱۰ الف)

$$\lim_{x \to 2} \frac{|x-2|}{x^2-3x+2} = \begin{cases} x \to 2^+ : \dfrac{x-2}{(x-1)(x-2)} = 1 \\ x \to 2^- : \dfrac{-(x-2)}{(x-2)(x-1)} = -1 \end{cases}$$