

نام و نام خانوادگی اینجا بنویسید پاسخنامه تشریحی تکلیف شماره ۱۸ کلاس دوازدهم (فصل اول)

الف) $\lim_{x \rightarrow 2^+} \frac{2x+5}{x+1} \xrightarrow{x=2} \frac{4+5}{2+1} = 3$

ب) $\lim_{x \rightarrow 2^-} \frac{2x+5}{x+1} \xrightarrow{x=2} \frac{4+5}{2+1} = 3$

ج) $\lim_{x \rightarrow 2} \frac{2x+5}{x+1} \xrightarrow{x=2} \frac{4+5}{2+1} = 3$

د) $\lim_{x \rightarrow 0} \frac{2x+7}{[x^2]} \rightarrow \frac{2x+7}{[0^+]} = \frac{7}{0} \rightarrow \infty$

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الف) $\lim_{x \rightarrow 3^-} 4[x] - 2 \xrightarrow{x=3^-} 4(2) - 2 = 6$

ب) $\lim_{x \rightarrow 3^-} [4x - 2] \xrightarrow{x=3^-} [4(3^-) - 2] = [12^- - 2] = [10^-] = 9$

ج) $\lim_{x \rightarrow 3^-} [4x - 2] \xrightarrow{x=3} [10] = 10 \quad ([4(3) - 2])$

د) $\lim_{x \rightarrow 3^+} [4x - 2] \xrightarrow{x=3} [10] = 10 \quad ([4(3) - 2])$

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الف) $\lim_{x \rightarrow 3^-} \frac{3[x]+1}{2} \xrightarrow{x=3^-} \frac{3(2)+1}{2} = \frac{7}{2}$

ب) $\lim_{x \rightarrow 3^-} \left[\frac{3x+1}{2} \right] \rightarrow \left[\frac{3(3^-)+1}{2} \right] = \left[\frac{10^-}{2} \right] = [5^-] = 4$

ج) $\lim_{x \rightarrow 3^-} \left[\frac{3x+1}{2} \right] \rightarrow \left[\frac{3(3)+1}{2} \right] = [5] = 5$

د) $\lim_{x \rightarrow 3^+} \left[\frac{3x+1}{2} \right] \rightarrow \left[\frac{3(3)+1}{2} \right] = [5] = 5$

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الف) $\lim_{x \rightarrow 1} \frac{x-5}{x^2-6x+5} = \frac{(x-5)}{(x-5)(x-1)} \rightarrow \frac{1}{+1-1+} \left\{ \begin{array}{l} \frac{-4}{0^-} = +\infty \\ \frac{-4}{0^+} = -\infty \end{array} \right\}$ خود ندارد

ب) $\lim_{x \rightarrow 3} \frac{x-4}{x^2-6x+9} = \frac{x-4}{(x-3)^2} \rightarrow \frac{3}{+1+} \left\{ \begin{array}{l} \frac{-1}{0^+} = -\infty \\ \frac{-1}{0^+} = -\infty \end{array} \right\}$ خود ندارد
درست برآورد است
مقدار منفی ندارد پس خود ندارد.

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الف) $\lim_{x \rightarrow -3} [-3x] - [5x] \xrightarrow{x=-3} [-3(-3^+)] - [5(-3^+)] = [9^-] - [-15^+] = 9 + 15 = 23$
 $\xrightarrow{x=-3} [-3(-3^-)] - [5(-3^-)] = [9^+] - [-15^-] = 9 + 16 = 25$ خود ندارد.

ب) $\lim_{x \rightarrow (-\frac{1}{2})^-} \left[\frac{-1}{x+4} \right] = \left[\frac{-1}{\frac{1}{16}^-} \right] = [-16^-] = -17$

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ب) $x < -\frac{1}{4} \rightarrow x^4 > \frac{1}{16} \rightarrow -x^4 < -\frac{1}{16} \rightarrow -\frac{1}{x^4} > -16$
 $\lim_{x \rightarrow -\frac{1}{4}^+} \left[-\frac{1}{x^4} \right] = -17$

الف) $\lim_{x \rightarrow 1} [4x^3 - 3x + 3]$

ب) $\lim_{x \rightarrow 0} [4x^3 - 3x + 3]$

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$\lim_{x \rightarrow 2} \frac{x^3 - 8}{x^2 - 4}$ $2^+ \rightarrow \frac{8^+ - 8}{4^+ - 4} \rightarrow \frac{x^3 - 8}{x^2 - 4} = \frac{(x-2)(x^2 + 2x + 4)}{(x-2)(x+2)} = \frac{x^2 + 2x + 4}{x+2} = \frac{12}{4} = 3$
 $2^- \rightarrow \frac{(x^3 - 8^-)}{x^2 - 4} = -\frac{(x-2)(x^2 + 2x + 4)}{(x-2)(x+2)} = -\frac{(x^2 + 2x + 4)}{x+2} = -\frac{12}{4} = -3$ } $\lim$

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$\lim_{x \rightarrow \pi} \frac{|\sin x|}{\sin 2x}$ $\pi^+ \rightarrow \frac{-\sin x}{2\sin x \cos x} = \frac{-1}{2\cos x} \xrightarrow{x=\pi} \frac{-1}{2(-1)} = \frac{1}{2}$
 $\pi^- \rightarrow \frac{\sin x}{2\sin x \cos x} = \frac{1}{2\cos x} \xrightarrow{x=\pi} \frac{1}{2(-1)} = -\frac{1}{2}$ } $\lim$

الف) $\lim_{x \rightarrow \frac{3\pi}{2}} \sqrt{\cos x}$ $\frac{3\pi}{2}^+ \rightarrow \sqrt{\cos \frac{3\pi}{2}^+} = 0$
 $\frac{3\pi}{2}^- \rightarrow \sqrt{\cos \frac{3\pi}{2}^-} \rightarrow \cos \frac{3\pi}{2}^- < 0 \rightarrow \text{ت.ن.}$ } $\lim$

$\lim_{x \rightarrow 0} \sqrt{x - 2\sqrt{x}}$ $0^+ \rightarrow \sqrt{0 - 2\sqrt{0}} = 0$
 $0^- \rightarrow x < 0 \rightarrow \text{ت.ن.}$ } $\lim$

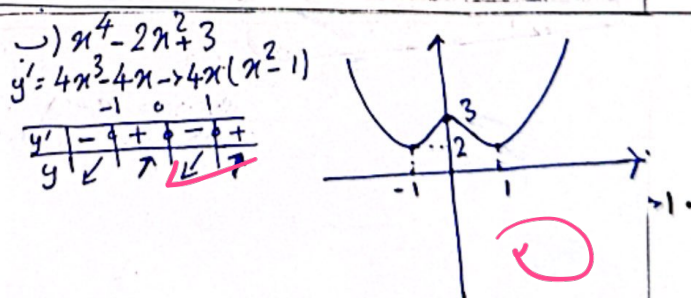
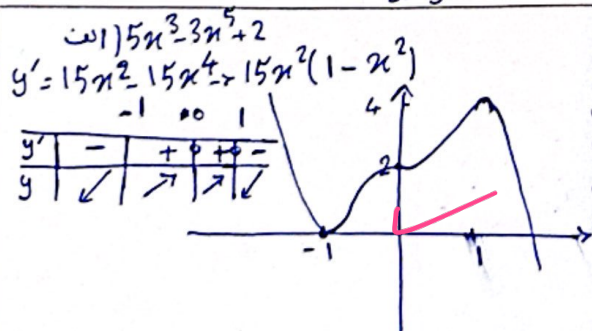
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الف) $\lim_{x \rightarrow 0^+} \frac{(-1)^{\lfloor \sin x \rfloor}}{x^3 - x^2}$ $\rightarrow \frac{(-1)^{\lfloor \sin 0^+ \rfloor}}{x(x^2 - x)} = \frac{(-1)^0}{x(x^2 - x)} = \frac{1}{x^2(x^2 - x)} \xrightarrow{x \rightarrow 0^+} \frac{1}{0^+} = +\infty$
 $x^2(x-1) = \frac{1}{-1-1+} = -\frac{1}{2}$ } $\lim$

ب) $\lim_{x \rightarrow 2} \frac{x^2 - [x^2]}{x - [x]}$ $2^+ \rightarrow \frac{x^2 - [x^2]}{x - [x]} = \frac{x^2 - 4}{x - 2} = \frac{(x+2)(x-2)}{(x-2)} = 4$
 $2^- \rightarrow \frac{x^2 - [x^2]}{x - [x]} = \frac{x^2 - 3}{x - 1} = 1$ } $\lim$

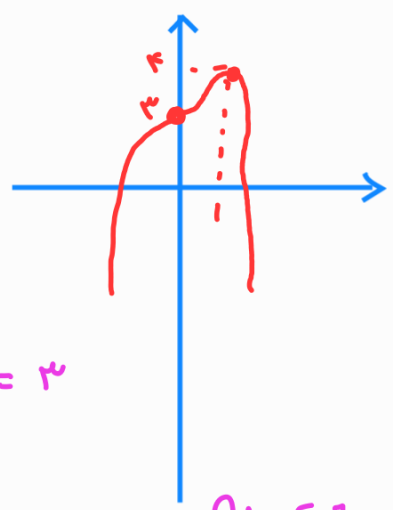
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$$y = [4n^3 - 3n^2 + 3] \rightarrow y' = 12n^2 - 6n \rightarrow y' = 0 \rightarrow 12n^2(1-n) = 0$$

$n=0, n=1$

	*		
	-	-	+
y'	-	-	+
y	↘	↘	↗



الف) $\lim_{n \rightarrow 1} [4n^3 - 3n^2 + 3] = [4] = 4$

ب) $\lim_{n \rightarrow 0} [4n^3 - 3n^2 + 3] = \begin{cases} n > 0 \rightarrow \lim[y] = [3^+] = 3 \\ n < 0 \rightarrow \lim[y] = [3^-] = 3 \end{cases}$

$$n - 2\sqrt{n} \geq 0 \rightarrow \sqrt{n}(\sqrt{n} - 2) \geq 0 \quad \text{for } n \leq 4$$

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$n \geq 0 \quad \text{I}$

II

سوال ۸ - ب

$I \cap II \quad n=0 \leq n \leq 4 \rightarrow \text{تبراهان ضریب} \quad \lim_{n \rightarrow 0} \sqrt{n - 2\sqrt{n}} = \infty$