

نام و نام خانوادگی: (نام و نام خانوادگی)	پاسخنامه تشریحی تکلیف شماره کلاس در درجه ۳
الف $\lim_{x \rightarrow 2^+} \frac{x+5}{x+1}$, $\frac{2(2)+5}{2+1} = 3$ ب $\lim_{x \rightarrow 2^-} \frac{x+5}{x+1}$, $\frac{2(2)+5}{2+1} = 3$ ج $\lim_{x \rightarrow 2} \frac{x+5}{x+1}$, $\frac{2(2)+5}{2+1} = 3$	تن $\frac{1}{20}$ کن $\frac{1}{20}$
الف $\lim_{n \rightarrow 3^-} \epsilon[n] - 2 = 4[3^-] - 2 = 4 \times 2 - 2 = 6$ ب $\lim_{n \rightarrow 3^-} \epsilon[n - 2] = [4(3^-) - 2] = [10] = 9$ ج $\left[\lim_{n \rightarrow 3^-} \epsilon[n - 2] \right] = [4 \times 3 - 2] = 10 > [\lim_{n \rightarrow 3^-} \epsilon[n - 2]] = [4 \times 3 - 2] = 10$	۲
الف $\lim_{x \rightarrow 3^-} \frac{3[x]+1}{x} = \frac{3 \times [3^-]+1}{3} = \frac{10}{3}$ ب $\lim_{x \rightarrow 3^-} \left[\frac{3x+1}{x} \right] = \left[\frac{3 \times 3 + 1}{3} \right] = [4] = 4$ ج $\left[\lim_{x \rightarrow 3^-} \frac{3x+1}{x} \right] = \left[\frac{3 \times 3 + 1}{3} \right] = 4 > \left[\lim_{x \rightarrow 3^-} \frac{3x+1}{x} \right] = \left[\frac{3 \times 3 + 1}{3} \right] = 4$	۳
الف $\lim_{x \rightarrow 0} \frac{x-5}{x^2-4x+5}$ $\begin{matrix} \nearrow 1^+ \\ \searrow 1^- \end{matrix}$ $\frac{-5}{0^+} = +\infty$ $\frac{-5}{0^-} = -\infty$ ب $\lim_{n \rightarrow 3} \frac{n-5}{n^2-4n+9}$ $\begin{matrix} \nearrow 3^+ \\ \searrow 3^- \end{matrix}$ $\frac{-1}{0^+} = -\infty$ $\frac{-1}{0^-} = -\infty$	۴
الف $\lim_{x \rightarrow -3} [-3x] - [5x]$ $\begin{matrix} \nearrow -3^+ \\ \searrow -3^- \end{matrix}$ $[9^-] - [-15^+] = 8 + 15 = 23$ $[9^+] - [-15^-] = 9 + 15 = 24$ $\lim_{n \rightarrow -\frac{1}{2}} \left[\frac{-1}{n\epsilon} \right]$ $x < -\frac{1}{2} \rightarrow n^2 > \frac{1}{4} \rightarrow \frac{1}{n\epsilon} < 4 \rightarrow \frac{-1}{n\epsilon} > -4$ $n \rightarrow -\frac{1}{2}^- \rightarrow \left[\frac{-1}{n\epsilon} \right] = -4$	۵

$\lim_{n \rightarrow 1} [\varepsilon n^p - r n^q + r]$ $\xrightarrow{\text{مستقيم}}$ $1 \cdot 1^p - r \cdot 1^q + r$ $1 \cdot 1^p / (1 - q)$ $\frac{0}{+1+0} = \frac{0}{1}$
 $\alpha \rightarrow 1$
 $\begin{cases} 1^+ [\varepsilon^-] = r \\ 1^- [\varepsilon^-] = r \end{cases}$ $\xrightarrow{\text{نقطة 1}} \text{مستقيم}$
 $\lim_{n \rightarrow 0} [\varepsilon n^p - r n^q + r] \xrightarrow{\text{مستقيم}}$ $\begin{cases} 0^+ [r^+] = r \\ 0^- [r^-] = r \end{cases}$

$\lim_{n \rightarrow 2} \frac{|n^p - 1|}{n^p - \varepsilon} \xrightarrow{\text{HOP}}$ $\begin{cases} 2^+ \lim \frac{n^p - 1}{n^p - \varepsilon} = \frac{2^p}{2^p} = 1 \\ 2^- \lim \frac{n^p - 1}{n^p - \varepsilon} = \frac{-2^p}{2^p} = -1 \end{cases}$

$\lim_{n \rightarrow n} \frac{|\sin n|}{\sin n} \xrightarrow{\alpha \rightarrow n^+} \lim \frac{-\cos n}{\sin n} = \frac{-1}{1 \cdot \cos n} = \frac{1}{1}$
 $\xrightarrow{\alpha \rightarrow n^-} \lim \frac{\cos n}{\sin n} = \frac{1}{1 \cdot \cos n} = \frac{1}{1}$

$\lim_{n \rightarrow \frac{\pi}{2}} \sqrt{\cos n} \xrightarrow{\alpha \rightarrow \frac{\pi}{2}^+} \sqrt{\cos \frac{\pi}{2}} = 0$
 $\xrightarrow{\alpha \rightarrow \frac{\pi}{2}^-} \sqrt{\cos \frac{\pi}{2}} = 0 \rightarrow \text{تكرار}$

$\lim_{n \rightarrow 0} \sqrt{n - 1.5n} \xrightarrow{\alpha \rightarrow 0^+} \sqrt{(0-1)^2 - 1} = \sqrt{1 - 1} = 0$
 $\xrightarrow{\alpha \rightarrow 0^-} \sqrt{0 - 1.5 \cdot 0} = 0$

$\lim_{n \rightarrow 0} \frac{(-1)^{[\sin n]}}{n^p - n^q} = \frac{(-1)^0}{n^p - n^q} = \frac{1}{n^p - n^q} = \frac{1}{n^p(n-1)} \rightarrow \frac{0}{-1-1+} = \frac{0}{-2}$

$\lim_{n \rightarrow 2} \frac{n^p - [n^q]}{n - [n]} \xrightarrow{\alpha \rightarrow 2^+} \frac{2^p - \varepsilon}{2 - \varepsilon} = 2^p - \varepsilon$
 $\xrightarrow{\alpha \rightarrow 2^-} \frac{2^p - \varepsilon}{2 - \varepsilon} = 2^p - \varepsilon$

$y = 2n^p - r n^q + r = -r n^q + 2n^p + r \xrightarrow{\text{مستقيم}}$ $-1 \cdot 2n^q + 1 \cdot 2n^p$

$-1 \cdot 2n^q (n^p - 1) \xrightarrow{\text{مستقيم}}$ $\frac{-1 \cdot 0 \cdot 1}{-1+1+1} = \frac{0}{1}$

$y = n^p - r n^q + r \xrightarrow{\text{مستقيم}}$ $\varepsilon n^p - \varepsilon n^q = \varepsilon n(n^p - 1)$

$\frac{-1 \cdot 0 \cdot 1}{-1+1+1} = \frac{0}{1}$