

الف) $\lim_{x \rightarrow 2^+} \frac{x+5}{x+1} = \frac{f(2)}{g(2)} = \textcircled{3}$

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ب) $\lim_{x \rightarrow 2^-} \frac{x+5}{x+1} = \frac{f(2)}{g(2)} = \textcircled{3}$

ج) $\lim_{x \rightarrow 2} \frac{x+5}{x+1} = \textcircled{3} \Rightarrow$ در این صورت برای هر ϵ در $(0, \infty)$ می توان δ را پیدا کرد

د) $\lim_{x \rightarrow 0} \frac{x+5}{[x^+]} = \frac{5}{0^+} = \frac{5}{0} = \infty$ تعریف نشده

الف) $\lim_{x \rightarrow 2^-} f(x) - 2 = f(2) - 2 = \textcircled{4}$

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ب) $\lim_{x \rightarrow 2^-} [x-2] = [1^-] = \textcircled{4}$

ج) $\lim_{x \rightarrow 2^-} [x-2] = [\lim_{x \rightarrow 2^-} 1] = \textcircled{10}$

د) $\lim_{x \rightarrow 2^-} [x-2] = \textcircled{10}$

الف) $\lim_{x \rightarrow 2^-} \frac{x+5}{x} = \frac{7}{2} = \textcircled{3,5}$

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ب) $\lim_{x \rightarrow 2^-} \left[\frac{x+5}{x} \right] = \left[\frac{7}{2} \right] = [3.5] = \textcircled{4}$

ج) $\left[\lim_{x \rightarrow 2^-} \frac{x+5}{x} \right] = \left[\frac{7}{2} \right] = \textcircled{4}$

د) $\left[\lim_{x \rightarrow 2^+} \frac{x+5}{x} \right] = \left[\frac{7}{2} \right] = \textcircled{4}$

الف) $\lim_{n \rightarrow 1} \frac{n-5}{n^2-4n+5} = \frac{n-5}{(n-2)(n-1)} \xrightarrow{n \rightarrow 1} \frac{1}{n-1} \begin{cases} 1^+ \rightarrow +\infty \\ 1^- \rightarrow -\infty \end{cases}$ (3)

ب) $\lim_{n \rightarrow 3} \frac{n-2}{n^2-4n+9} = \frac{n-2}{(n-3)^2} \xrightarrow{n \rightarrow 3} \frac{-1}{0^+} = -\infty$
 $\xrightarrow{n \rightarrow 3} \frac{-1}{0^-} = -\infty$ (2)

الف) $\lim_{n \rightarrow -3} [-n] - [5n] \xrightarrow{n^+} [9] - [-15] = 14 + 15 = 29$ (5)
 $\xrightarrow{n^-} [4] - [-15] = 4 + 15 = 19$ (28)

ب) $\lim_{n \rightarrow (-\frac{1}{2})^-} \left[\frac{-1}{2n} \right]$
 $n < -\frac{1}{2} \Rightarrow \frac{1}{n} > -2 \Rightarrow \frac{1}{2n} < -1 \Rightarrow \frac{-1}{2n} > -1 \Rightarrow \left[\frac{-1}{2n} \right] = -1$ (4)

الف) $\lim_{n \rightarrow 1} [4n^3 - n^2 + 3] = [4 - 1 + 3] = 6$ (3)
 مرسوم في صفر وتابع بارسم في سعة

ب) $\lim_{n \rightarrow 0} [4n^3 - n^2 + 3] \xrightarrow{n^+} [3] = 3$
 $\xrightarrow{n^-} [3] = 3$ (2)

الف) $\lim_{n \rightarrow 2} \frac{n^3-1}{n^2-2} = \frac{(n-1)(n^2+n+1)}{(n-2)(n+1)} \xrightarrow{n \rightarrow 2} \frac{12}{8} = \frac{3}{2}$ (5)

ب) $\lim_{n \rightarrow \pi} \frac{\sin n}{\sin 2n} = \frac{\sin n}{2 \sin n \cos n} = \frac{1}{2 \cos n} \xrightarrow{n \rightarrow \pi} \frac{1}{2(-1)} = -\frac{1}{2}$ (2)
 $\xrightarrow{n \rightarrow \pi} \frac{\sin n}{\sin n} = \frac{1}{\cos n} \xrightarrow{n \rightarrow \pi} \frac{1}{-1} = -1$

الف) $\lim_{x \rightarrow 0^+} \sqrt{x} = 0$

$x \rightarrow \frac{3}{8}$

$\frac{3}{8} \rightarrow \sqrt{0^+} = 0$

تعريف لنسبة

ب) $\lim_{x \rightarrow 0} \sqrt{x} = 0$

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الف) $\lim_{x \rightarrow 0^+} \frac{-1}{x - x^2} = \frac{1}{0^+} = \frac{1}{0^+} = -\infty$

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

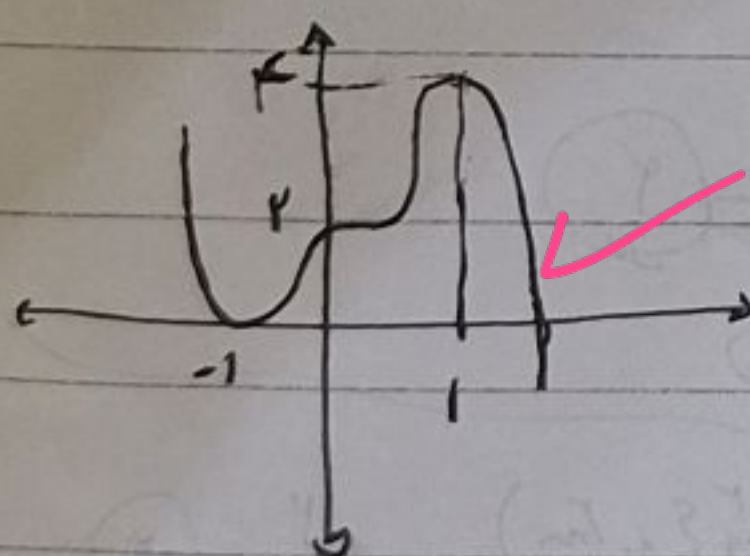
$x \rightarrow 2$

$\frac{x^2 - \varepsilon}{x - 2} = \frac{x^2 - \varepsilon}{x - 2}$

$\frac{x - 3}{x - 1} = 1$

الف) $y = 5x^3 - 3x^2 + 1 = 15x^2 - 6x = 15x^2(1 - \frac{2}{5}x) =$

$\begin{array}{r} 15x^2 \\ \times (1 - \frac{2}{5}x) \\ \hline 15x^2 - 6x \end{array}$



ب) $y = x^4 - 2x^3 + 3x^2$

$f(x) = x^4 - 2x^3 + 3x^2$

$\begin{array}{r} 15x^2 \\ \times (1 - \frac{2}{5}x) \\ \hline 15x^2 - 6x \end{array}$

