

پیدا کردن حد در این موارد

الف) $\lim_{x \rightarrow 2} \frac{2x+5}{x+1} = \frac{9}{3} = 3$

ج) $\lim_{x \rightarrow 2} \frac{2x+5}{x+1} = \frac{9}{3} = 3$

ب) $\lim_{x \rightarrow 2} \frac{2x+5}{x+1} = \frac{9}{3} = 3$

د) $\lim_{x \rightarrow 0} \frac{2x+5}{[x^2]} = \frac{5}{0} = \infty$
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۲. اثبات به روش

الف) $\lim_{x \rightarrow 3} f(x) - 2 = f(3) - 2 = 8 - 2 = 6$

ب) $\lim_{x \rightarrow 3} [f(x) - 2] = 6$

ج) $\left[\lim_{x \rightarrow 3} f(x) - 2 \right] = 6$

د) $\left[\lim_{x \rightarrow 3} f(x) - 2 \right] = 6$

الف) $\lim_{x \rightarrow 3} \frac{f(x)+1}{f} = \frac{3}{1.5}$

ج) $\left[\lim_{x \rightarrow 3} \frac{f(x)+1}{f} \right] = \frac{3}{1.5}$

ب) $\lim_{x \rightarrow 3} \left[\frac{f(x)+1}{f} \right] = \frac{3}{1.5}$

د) $\left[\lim_{x \rightarrow 3} \frac{f(x)+1}{f} \right] = \frac{3}{1.5}$

الف) $\lim_{x \rightarrow 1} \frac{x-5}{x^2-x+6} = \frac{x-5}{(x-5)(x-1)} = \frac{1}{(x-1)}$

$\begin{cases} 1^+ = \frac{1}{0^+} = +\infty \\ 1^- = \frac{1}{0^-} = -\infty \end{cases}$

ب) $\lim_{x \rightarrow 3} \frac{x-4}{x^2-9x+9} = \frac{x-4}{(x-3)^2} \begin{cases} 3^+ \\ 3^- \end{cases} \rightarrow \frac{-1}{0^+} = -\infty$
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الف) $\lim_{x \rightarrow -2} [-3x] - [5x] = \begin{cases} 3^+ = 8 - (-10) = 18 \\ 3^- = 9 - (-16) = 25 \end{cases}$

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

$\lim_{x \rightarrow 1} [4x^3 - 3x^2 + 3] \xrightarrow{\text{فیلتر}} f(x), 12x^2 - 12x^2 \rightarrow$

$\begin{aligned} & \xrightarrow{x \rightarrow 1^+} [f] = 3 \\ & \xrightarrow{x \rightarrow 1^-} [f] = 3 \end{aligned}$

$\lim_{x \rightarrow 1} [4x^3 - 3x^2 + 3] \xrightarrow{x \rightarrow 1^+} [f] = 3$
 $\xrightarrow{x \rightarrow 1^-} [f] = 2$

$\lim_{x \rightarrow 2} \frac{x^2 - 8}{x^2 - 4} \xrightarrow{x \rightarrow 2^+} \frac{x^2 - 8}{x^2 - 4} \xrightarrow{\text{HOP}} \frac{4x^2}{2x} = 3$

$\lim_{x \rightarrow 2} \frac{x^2 - 8}{x^2 - 4} \xrightarrow{x \rightarrow 2^-} \frac{-x^2 + 8}{x^2 - 4} \xrightarrow{\text{HOP}} \frac{-2x^2}{2x} = -2$

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

$\lim_{x \rightarrow \frac{\pi}{2}} \sqrt{\cos x} \xrightarrow{x \rightarrow \frac{\pi}{2}^+} \sqrt{\cos} = 0$

$\lim_{x \rightarrow 1} \sqrt{x - 2\sqrt{x}} \xrightarrow{x \rightarrow 1^+} \sqrt{\cos} \rightarrow 0$
 $\xrightarrow{x \rightarrow 1^-} \sqrt{\cos} \rightarrow 0$

$\lim_{x \rightarrow 1} \frac{f(x) [\sin x]}{x^2 - x^2} = \frac{[1]}{0} = \frac{1}{0} = -\infty$
 $\lim_{x \rightarrow 1} \frac{x^2 - [x^2]}{x - [x]} \xrightarrow{x \rightarrow 1^+} \frac{x^2 - 1}{x - 1} = x + 1 = 2$
 $\xrightarrow{x \rightarrow 1^-} \frac{x^2 - 1}{x - 1} = 1$

