

کامیاب ترین دراز دستم تحریر میسر

$$\text{الف)} \Rightarrow \frac{f(x) + \delta}{x^2 + 1} = \frac{q}{3} = 3 \Rightarrow \lim_{x \rightarrow 2^+} \frac{x^2 + \delta}{x^2 + 1} = (3)$$

$$\text{ب)} \Rightarrow \frac{f(x) + \delta}{x^2 + 1} = \frac{q}{3} = 3 \Rightarrow \lim_{x \rightarrow 2^-} \frac{x^2 + \delta}{x^2 + 1} = (3)$$

$$\text{ج)} \Rightarrow \frac{f(x) + \delta}{x^2 + 1} = \frac{3 + q}{3} = (3)$$

$$\text{د)} \Rightarrow \text{اول، اربع برکت} \Rightarrow \left[\begin{matrix} x^2 \\ 0^- \end{matrix} \right] = 0 \Rightarrow \frac{f(0) + V}{0} = \frac{V}{0} = \text{تعمیر نشده}$$

صفر مطلق

$$\text{الف)} \lim_{x \rightarrow 2^-} f(x) - 2 \Rightarrow \text{اول، اربع برکت} \Rightarrow f(x) - 2 = (6)$$

$$\text{ب)} \lim_{x \rightarrow 2^-} [f(x) - 2] \Rightarrow f(x) = 12 \Rightarrow [12 - 2] = (9)$$

$$\Rightarrow \lim_{x \rightarrow 2^-} [f(x) - 2] = 9$$

$$\text{ج)} \left[\lim_{x \rightarrow 2^-} f(x) - 2 \right] = (10)$$

$$\text{د)} \left[\lim_{x \rightarrow 2^+} f(x) - 2 \right] = (10)$$

$$\text{الف)} \lim_{x \rightarrow 2^+} \frac{f(x) + 1}{x} \Rightarrow \frac{f(x) + 1}{x} = \left(\frac{V}{2} \right)$$

$$\text{ب)} \lim_{x \rightarrow 2^-} \left[\frac{f(x) + 1}{x} \right] \Rightarrow \left[\frac{f(x) + 1}{x} \right] = (5)$$

$$\text{ج)} \left[\lim_{x \rightarrow 2^+} \frac{f(x) + 1}{x} \right] \Rightarrow \left[\lim_{x \rightarrow 2^+} \frac{f(x) + 1}{x} \right] \Rightarrow (5)$$

$$\text{د)} \left[\lim_{x \rightarrow 2^+} \frac{f(x) + 1}{x} \right] = (9)$$

$$الف) \lim_{x \rightarrow 1} \frac{x-5}{x^2-4x+5} \Rightarrow \frac{(x-5)}{(x-5)(x-1)} = \frac{1}{(x-1)} \Rightarrow \lim_{x \rightarrow 1} \frac{1}{(x-1)}$$

(ع)

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

$$ب) \lim_{x \rightarrow 2} \frac{(x-5)}{x^2-4x+9} \Rightarrow \begin{cases} \xrightarrow{2^+} \frac{(2^+-5)}{(2^+)^2-11(2^+)+9} = \frac{-1^+}{0^+} = -\infty \\ \xrightarrow{2^-} \frac{(2^--5)}{(2^-)^2-11(2^-)+9} = \frac{-1^+}{0^+} = -\infty \end{cases}$$

$$الف) \lim_{x \rightarrow -3} [-x^2] - [5x]$$

$$\begin{cases} \xrightarrow{-3^+} [-x^2] - [5x] = \Delta - [5(-3^+)] = 0 + 15 = 15 \\ \xrightarrow{-3^-} [-x^2] - [5x] = 9 - [5(-3^-)] = 9 + 15 = 24 \end{cases}$$

(د)

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

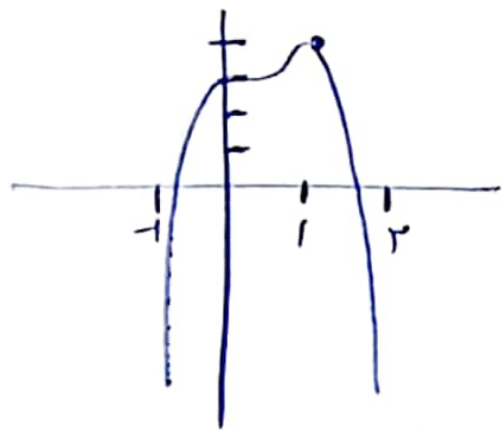
$$الف) \begin{cases} \xrightarrow{2^+} \frac{x^2-1}{x^2-5} = \frac{(x-1)(x+1)}{(x-5)(x+1)} = \frac{x^2+2x+5}{x+5} = \frac{2^2+2(2)+5}{2+5} = \frac{15}{7} \\ \xrightarrow{2^-} \frac{-x^2+1}{(x^2-5)} = \frac{-(x^2-1)}{(x-5)(x+1)} = \frac{-(x^2+2x+5)}{(x+5)} = \frac{-15}{7} \end{cases}$$

$$ب) \begin{cases} \xrightarrow{\pi^+} \frac{-\sin x}{x \sin x \cos x} = \frac{-1}{x \cos x} = \frac{-1}{x \cos \pi} = \frac{1}{\pi} \\ \xrightarrow{\pi^-} \frac{\sin x}{x \sin x \cos x} = \frac{1}{x \cos x} = \frac{1}{x \cos \pi} = -\frac{1}{\pi} \end{cases}$$

$$الف) \lim_{x \rightarrow \frac{\pi}{2}} \sqrt{\cos x} \Rightarrow \sqrt{\cos \frac{\pi}{2}} = \sqrt{0} = 0$$

$$ب) \lim_{x \rightarrow \infty} \sqrt{2-2\sqrt{x}} \Rightarrow 2-2\sqrt{x} \geq 0 \Rightarrow 2 \geq \sqrt{x} \Rightarrow x \in [-4, 4]$$

$$f(x) = 4x^3 - 3x^4 + 3 \quad \text{عقب}$$



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

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

سوال ۹

از روی شکل
رسم شده تابع

$$6) \lim_{x \rightarrow 0^+} \frac{(-1)^{\lfloor \sin x \rfloor}}{2^x - 2^y} \Rightarrow \left\{ \begin{matrix} 0 \\ \infty \end{matrix} \right\} \Rightarrow \frac{(-1)^0}{2^x - 2^y} = \frac{1}{2^x(2^x - 1)} \Rightarrow \frac{1}{0^+} = +\infty \quad (9)$$



$$7) \lim_{x \rightarrow 2} \frac{2^x - \lfloor 2^x \rfloor}{2 - \lfloor 2 \rfloor}$$

$$\begin{matrix} \nearrow & x^+ & \lfloor 2^x \rfloor = 6 \\ & & \lfloor 2 \rfloor = 2 \end{matrix} \Rightarrow \frac{2^x - 6}{2 - 2} = \frac{(2-x)(2^x)}{2-x} = 2^x$$

$$\lim_{x \rightarrow 2} 2^x = 4$$

$$\begin{matrix} \searrow & x^- & \lfloor 2^x \rfloor = 5 \\ & & \lfloor 2 \rfloor = 1 \end{matrix} \Rightarrow \frac{2^x - 5}{2 - 1} \Rightarrow \lim_{x \rightarrow 2^-} \frac{2^x - 5}{2 - 1} = 1$$

(10)

$$0.5^x - 1.5^x = 1.5^x - 1.5^x \Rightarrow 1.5^x - 1.5^x \Rightarrow 1.5^x - 1.5^x$$



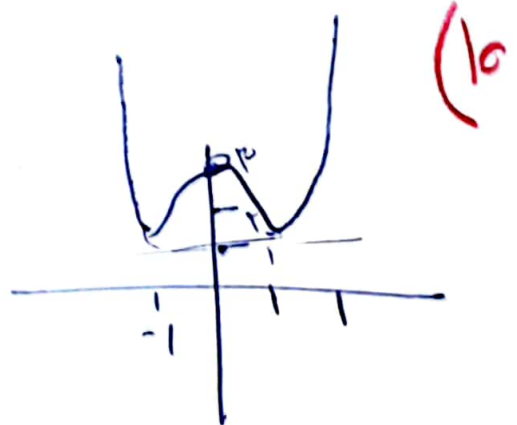
$$2^x - 1.5^x = 1.5^x - 1.5^x \Rightarrow 1.5^x - 1.5^x$$



الن)



ن)



(10)