

☆ 19/5

Date

Subject

$$f(x) = \gamma \left[\frac{\gamma - x}{\gamma} \right] + a \cdot \left[\frac{x + \gamma}{\gamma} \right]$$

صورت سوال را دایر بنویس!

$$\left. \begin{aligned} \lim_{x \rightarrow -\gamma^+} f(x) &= \lim_{x \rightarrow -\gamma^+} \gamma \left\{ (1) + a(0) \right\} = \gamma \\ \lim_{x \rightarrow -\gamma^-} f(x) &= \lim_{x \rightarrow -\gamma^-} \gamma(\gamma) + a(-1) = \gamma - a \end{aligned} \right\} \Rightarrow \gamma = \gamma - a \rightarrow a = \gamma$$

$$\left[\frac{a}{\gamma} \right] = \left[\frac{\gamma}{\gamma} \right] = 0$$

$$\lim_{x \rightarrow (\frac{\pi}{2})^-} [\gamma \sin x - 1] = L \quad 0 < x < \frac{\pi}{2} \rightarrow 0 < \sin x < \frac{1}{\gamma} \quad (2)$$

$$\Rightarrow -1 < \gamma \sin x - 1 < 0 \Rightarrow [\gamma \sin x - 1] = -1 \Rightarrow L = -1$$

$$f(x) = \wedge x^\gamma - x \Rightarrow f\left(-\frac{1}{\gamma}\right) = -1 + \frac{1}{\gamma} = -\frac{1}{\gamma} \quad (3)$$

$$\lim_{x \rightarrow -\frac{1}{\gamma}} [f(x)] = -1$$

$$\lim_{x \rightarrow (-\frac{1}{\gamma})^-} \frac{1 \cdot x - a + \left[\frac{\gamma}{x^\gamma} \right]}{1 \gamma x - \left[\frac{\gamma}{x^\gamma} \right]} = L \quad \left\{ \begin{aligned} x < -\frac{1}{\gamma} \rightarrow x^\gamma > \frac{1}{\gamma} \rightarrow \frac{1}{x^\gamma} < \gamma \\ \frac{\gamma}{x^\gamma} < 1\gamma, -\frac{\gamma}{x^\gamma} > -1 \end{aligned} \right. \quad (4)$$

$$L = \lim_{x \rightarrow (-\frac{1}{\gamma})^-} \frac{1 \cdot x - a + 1}{1 \gamma x + 1} \quad \Delta = \frac{0}{0} = -\infty \quad \left[\frac{\gamma}{x^\gamma} \right] = 1, \left[-\frac{\gamma}{x^\gamma} \right] = -1$$

$$\lim_{x \rightarrow 1^+} \frac{\sin^\gamma(\pi x)}{[x] + \cos \pi x} = \lim_{x \rightarrow 1^+} \frac{\sin^\gamma(\pi x)}{1 + \cos \pi x} \quad (5)$$

$$= \lim_{x \rightarrow 1^+} \frac{1 - \cos^\gamma(\pi x)}{1 + \cos(\pi x)} = \lim_{x \rightarrow 1^+} (1 - \cos(\pi x)) = \gamma$$

$$L_1 = \lim_{x \rightarrow -1} \frac{\sqrt{\gamma x + \gamma} - 1}{\gamma x + 1}, \quad L_\gamma = \lim_{x \rightarrow -1} \frac{\sqrt{\gamma x + \gamma} - 1}{x + 1} \quad (6)$$

$$L_\gamma = \lim_{x \rightarrow -1} \frac{\sqrt{x} + 1}{x + 1}$$

$$L_1 = \lim_{x \rightarrow -1} \frac{(\gamma x + \gamma) - 1}{(x + 1)(\sqrt{\gamma x + \gamma} + 1)} = 1$$

$$L = \lim_{x \rightarrow -1} \frac{\left(\frac{\sqrt{\gamma x + \gamma} - 1}{x + 1} \right) - \left(\frac{\sqrt{\gamma x + \gamma} - 1}{x + 1} \right)}{\frac{\sqrt{x} + 1}{x + 1}}$$

$$L_\gamma = \lim_{x \rightarrow -1} \frac{(\gamma x + \gamma) - 1}{(x + 1)(\sqrt{\gamma x + \gamma} + 1)} = \frac{\gamma}{\gamma}$$

$$L_\gamma = \frac{1}{\gamma}$$

$$L = \frac{L_1 - L_\gamma}{L_\gamma} = -\frac{\gamma}{\gamma}$$

در هند و محاسبه فضا، بیایم این روش را یاد بگیریم!

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$$\lim_{x \rightarrow 1} \frac{2x - \sqrt{2x+1}}{2x - \sqrt{2x+1}} = \lim_{x \rightarrow 1} \frac{(\sqrt{x}-1)(2\sqrt{x}-1)}{2x^2 - (2x+1)} \quad (V)$$

$$\lim_{x \rightarrow 1} \frac{(\sqrt{x}-1)}{x-1} \times \frac{(2\sqrt{x}-1)}{(2x+1)} = \frac{1}{2} \times \frac{-1}{2} \times \frac{1}{2} = -\frac{1}{8}$$

$$\lim_{x \rightarrow 0} \frac{a + \sqrt{bx+c}}{x} = \frac{1}{x} \rightarrow a + \sqrt{b(0)+c} = 0 \rightarrow \sqrt{c} = -a \rightarrow c = a^2$$

$$\Rightarrow \frac{-a + (bx+c)}{x(\sqrt{bx+c}-a)} = \frac{bx}{x(\sqrt{bx+c}-a)} = \frac{b}{\sqrt{bx+c}-a}$$

$$x=0 \rightarrow \frac{1}{x} = \frac{b}{\sqrt{c}-a} = \frac{b}{-a} \Rightarrow b = -\frac{a}{x}$$

$$\frac{ab}{c} = \frac{a(-\frac{a}{x})}{a^2} = -\frac{1}{x}$$

$$\lim_{x \rightarrow (-\infty)} \frac{x + k[\frac{x}{x}]}{\sin x} = +\infty \quad (9)$$

$$I) x > -\infty \rightarrow \sin x > 0 \rightarrow x + k[\frac{x}{x}] > 0 \rightarrow x + k(-1) > 0 \rightarrow k < x$$

$$II) x < -\infty \rightarrow \sin x < 0 \rightarrow x + k[\frac{x}{x}] < 0 \rightarrow x - k < 0 \rightarrow k > x$$

$$L = \lim_{x \rightarrow 1} \frac{\sqrt{2+\sqrt{x}} - 2}{(\frac{a}{b})x - 1} \rightarrow \text{در صورت } 0=0 \Rightarrow \frac{a}{b} = \frac{1}{1}$$

$$f(x) = \sqrt{2+\sqrt{x}} \rightarrow L = \lim_{x \rightarrow 1} \frac{f(x) - f(1)}{x - 1} = f'(1)$$

$$f'(x) = \frac{1}{2} \times \frac{1}{\sqrt{x}} \times \frac{1}{2} (2+\sqrt{x})^{-\frac{1}{2}}$$

$$f'(1) = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$$

$$\lim \frac{(\sqrt{n}-1)(\sqrt{n}-2)}{\sqrt{n}-\sqrt{n+1}} \times \frac{\sqrt{n}+\sqrt{n+1}}{\sqrt{n}+\sqrt{n+1}} = \frac{(\sqrt{n}-1)(\sqrt{n}-2) \times \sqrt{n}}{n^2 - n - 1}$$

$$\lim \frac{\cancel{(\sqrt{n}-1)}(\sqrt{n}-2) \times \sqrt{n}}{\cancel{(\sqrt{n}-1)}(n+1)} = \lim \frac{[\sqrt{n}-2] \times \sqrt{n}}{(n+1) \times \sqrt{n}} = -\frac{1}{2}$$