

SUBJECT:

19. $\lim_{x \rightarrow -1} \left[\frac{1-x}{x} + a \left[\frac{x+1}{x} \right] \right] = 2$

$$f(x) = 1 \left[\frac{1-x}{x} \right] + a \left[\frac{x+1}{x} \right] \quad x = -1 \quad \left[\frac{a}{x} \right] = 2$$

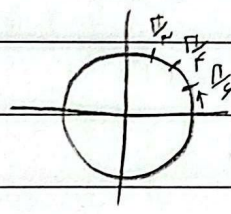
$$x \rightarrow -1^+ \quad 1 \left[\frac{1-x}{x} \right] + a \left[\frac{x+1}{x} \right] = 1 \quad 1 = f - a \quad \textcircled{1}$$

$$\boxed{a = 1}$$

$$x \rightarrow -1^- \quad 1 \left[\frac{1-x}{x} \right] + a \left[\frac{x+1}{x} \right] = f - a$$

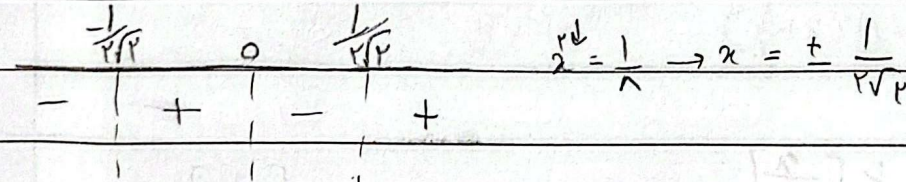
$$\left[\frac{1}{x} \right] = 0$$

$$\lim_{x \rightarrow \left(\frac{1}{2}\right)^-} [2f(x) - 1] = \left[2\left(\frac{1}{2}\right)^- - 1 \right] = [1^- - 1] = [0^-] = -1$$



$$\lim_{x \rightarrow -\frac{1}{p}} [\lambda x^r - x] \rightarrow x \rightarrow \left(-\frac{1}{p}\right)^+ \left[\lambda \left(-\frac{1}{p}\right)^+ + \frac{1}{p} \right] = -1 \quad \textcircled{2}$$

$$x \rightarrow -\frac{1}{p} \quad \lambda x^r = 1 \quad x \rightarrow \left(-\frac{1}{p}\right)^- \left[\lambda \left(-\frac{1}{p}\right)^- + \frac{1}{p} \right] = -1 \quad \textcircled{-1}$$



$$\lim_{x \rightarrow \left(-\frac{1}{p}\right)^-} \frac{1 \cdot x - a + \left[\frac{x}{x^r}\right]}{14x - \left[\frac{-r}{x^r}\right]} = \frac{1 \cdot x + 4}{14x + 11} = \frac{-a - a + 11}{-11 + 11} = \frac{1}{0^-} = -\infty \quad \textcircled{3}$$

$$\left[\frac{x}{x^r} \right] = \left[\frac{x}{\left(\frac{1}{p}\right)^+} \right] = [1^+] = 1$$

$$\left[\frac{-r}{x^r} \right] = \left[- \left[- \frac{r}{\left(\frac{1}{p}\right)^+} \right] \right] = [-1^-] = -1$$

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19. قوتاً بکھینچنے والے فنکشن کی شکل

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

$$= 1 - \cos \pi = 1 - (-1) = 2$$

$$\lim_{x \rightarrow -1} \frac{\sqrt{x+3} - \sqrt{x+5}}{1 + \sqrt{x}}$$

$$\frac{\sqrt{x+3} - \sqrt{x+5}}{1 + \sqrt{x}} \times \frac{1 + \sqrt{x} - \sqrt{x}}{1 + \sqrt{x} - \sqrt{x}} \times \frac{\sqrt{x+3} + \sqrt{x+5}}{\sqrt{x+3} + \sqrt{x+5}}$$

$$= \frac{-(x+1)}{(-x-1) \times 2} = -\frac{1}{2}$$

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

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

$$\lim_{x \rightarrow -\infty} \frac{f + k[\frac{x}{n}]}{\sin x} = +\infty \quad [-k]$$

$$\frac{f - k}{0^+} = +\infty \rightarrow f - k > 0 \rightarrow f > k$$

$$\frac{f - k}{0^-} = +\infty \rightarrow f - k < 0 \rightarrow f < k$$

$$[-k] = -\frac{1}{k}$$

$$-\frac{f}{k} > -k > -\frac{1}{k} \leftarrow \frac{f}{k} < k < \frac{1}{k}$$

$$\lim_{x \rightarrow 0} \frac{a + \sqrt{bx+c}}{x} = \frac{1}{f} \quad \frac{ab}{c}$$

$$\frac{a + \sqrt{bx+c}}{x} \times \frac{a - \sqrt{bx+c}}{a - \sqrt{bx+c}} = \frac{a^2 - bx - c}{x(a - \sqrt{bx+c})}$$

$a + \sqrt{c} = 0$
 $-\sqrt{c} = a \rightarrow a^2 = c$

$$\frac{a^2 - bx - c}{x(a - \sqrt{bx+c})} = \frac{1}{f} \rightarrow \frac{-bx}{+1ax} = \frac{1}{f} \rightarrow -fb = fa$$

$-fb = a$
 $b = -\frac{a}{f}$

$$\frac{ab}{c} = \frac{a \times -\frac{a}{f}}{a^2} = \left(-\frac{1}{f}\right)$$

$$\lim_{x \rightarrow 1} \frac{b\sqrt{x+\sqrt{x}} - 1b}{ax-b} \quad \begin{matrix} 0 \\ 0 \end{matrix} \quad \begin{matrix} (1a=b) * \\ b'(-1+\sqrt{x}) \end{matrix}$$

$$\lim_{x \rightarrow 1} \frac{b'(\sqrt{x} + \sqrt{x}) - 1b'}{(ax-b)(1a)} \rightarrow \lim_{x \rightarrow 1} \frac{-1b' + \sqrt{x} b'}{(ax-b)(1b)} *$$

$$\lim_{x \rightarrow 1} \frac{b(\sqrt{x} - 1)}{ax - 1a} \rightarrow \lim_{x \rightarrow 1} \frac{b(\sqrt{x} - 1)}{x(x-1)}$$

$(\sqrt{x} - 1)(\sqrt{x} + 1 + 1)$

$$\Rightarrow \lim_{x \rightarrow 1} \frac{1}{\sqrt{x} + 1 + 1} = \frac{1}{1+1+1} = \frac{1}{3}$$