

$$\lim_{x \rightarrow -1} \frac{(x+1)(x+1)}{4(1+\sqrt{x})} = \lim_{x \rightarrow -1} \frac{(x+1)(\sqrt{x}+1)(\sqrt{x}-1)}{4(\sqrt{x}+1)} = \frac{-4 \times 1}{4} = -1 \quad \checkmark$$

(Y)

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$$\lim_{x \rightarrow 0} \frac{\sqrt{1+x} - \sqrt{1-x}}{\sqrt{1-\cos x}} = \lim_{x \rightarrow 0} \frac{1+x-1-x}{\sqrt{1-\cos x}} \times \frac{\sqrt{1+\cos x}}{\sqrt{1+\cos x}} = \frac{2x}{|2\sin x|} \times \frac{1}{2} = \frac{1}{|x|} \times \frac{1}{2} = \frac{1}{2} \quad \checkmark$$

مميز

(Y)

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$$\lim_{x \rightarrow 0} \frac{k + \cos \sqrt{x}}{kx^2} = \infty \xrightarrow{\text{h.p}} \frac{-\sqrt{x} \sin \sqrt{x}}{2kx} \xrightarrow{\text{h.p}} \frac{-a \cos \sqrt{x}}{2k}$$

$$\Rightarrow \lim_{x \rightarrow 0} \frac{-a \cos \sqrt{x}}{2k} = \infty \rightarrow \frac{-a}{2k} = \infty \rightarrow \frac{a}{k} = -4 \quad \checkmark$$

(Y)

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$$\lim_{x \rightarrow (a)^+} \frac{\sqrt{x-a} + \sqrt{x} - \sqrt{a}}{\sqrt{x^2-a^2}} = \lim_{x \rightarrow (a)^+} \frac{0 + \sqrt{x-a} - \sqrt{a}}{\sqrt{x^2-a^2}} = \frac{\sqrt{a}(\sqrt{e}-1)}{0^+} = +\infty \quad \textcircled{a}$$

$$\lim_{x \rightarrow a^+} \frac{\sqrt{x-a}}{\sqrt{x-a}\sqrt{x+a}} + \frac{\sqrt{x}-\sqrt{a}}{\sqrt{x-a}\sqrt{x+a}} = \lim_{x \rightarrow a^+} \left(\frac{1}{\sqrt{x+a}} + \frac{\sqrt{x}-\sqrt{a}}{\sqrt{x-a}\sqrt{x+a}} \times \frac{\sqrt{x}+\sqrt{a}}{\sqrt{x}+\sqrt{a}} \right) \rightarrow$$

$$\lim_{x \rightarrow a^+} \left(\frac{1}{\sqrt{x+a}} + \frac{1(\sqrt{x}-\sqrt{a})}{(\sqrt{x-a}\sqrt{x+a})(\sqrt{x}+\sqrt{a})} \right) = \lim_{x \rightarrow a^+} \left(\frac{1}{\sqrt{x+a}} + \frac{1(\sqrt{x}-\sqrt{a})}{(\sqrt{x-a})(\sqrt{x+a})(\sqrt{x}+\sqrt{a})} \right) = \lim_{x \rightarrow a^+} \frac{1}{\sqrt{x+a}} + 0$$

$\frac{\sqrt{F}}{\sqrt{a}} = \sqrt{\frac{F}{a}} = \sqrt{\frac{1}{a}}$

$$\lim_{x \rightarrow -1} \frac{1-k[x]}{x^2-1} = -\infty \quad \begin{cases} -1^+ : \frac{1+k}{-2} = -\infty \rightarrow 1+k > 0 \rightarrow k > -1 \\ -1^- : \frac{1+k}{0^+} = -\infty \rightarrow 1+k < 0 \rightarrow k < -1 \end{cases}$$

$$\Rightarrow -1 < k < \frac{1}{2} \rightarrow -\pi < k\pi < \frac{\pi}{2}$$



$$\cos k\pi \in \left(\cos \frac{\pi}{2}, \cos -\pi \right)$$



$$-1 < \cos k\pi < 0$$

(Y)

برای هر کس که می‌داند
که در این سوال
این جواب درست است

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