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$$\text{HOP} \xrightarrow{x \rightarrow 1} \frac{1x-1}{1 \cdot x-1} = \frac{1}{1} \checkmark$$

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$$\lim_{x \rightarrow 0} \frac{(x-1) - (x+1)}{x} = \frac{1-x-1-x-1}{x} = \frac{-2x-1}{x} = -2 - \frac{1}{x}$$

$$\frac{-\frac{1}{x} - \frac{1}{x}}{x} = -\frac{2}{x^2} = -\infty \checkmark$$

(۲)

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$$\lim_{x \rightarrow 4} \frac{x-4}{\sqrt{x}-2} \rightarrow \frac{(\sqrt{x}-2)(\sqrt{x}+2)}{\sqrt{x}-2} = \sqrt{x}+2 \xrightarrow{x=4} 4 \checkmark$$

(۲)

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$$\text{HOP} \xrightarrow{x \rightarrow 1} \frac{1-\sqrt{x}}{x-1} = \frac{1-\sqrt{x} \times \frac{1}{\sqrt{x}}}{1-1} = \frac{1-\frac{1}{\sqrt{x}}}{1-1} = \frac{1}{\sqrt{x}} \xrightarrow{x=1} 1 \checkmark$$

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$$\lim_{x \rightarrow 0} \frac{1-\sqrt{x}}{1-\sqrt{a+x}} \times \frac{\frac{1}{\sqrt{x}}}{\frac{1}{\sqrt{x}}} \times \frac{\frac{1}{\sqrt{a+x}}}{\frac{1}{\sqrt{a+x}}} = \frac{1-\sqrt{x}}{1-\sqrt{a+x}} \times \frac{\sqrt{x}}{\sqrt{a+x}} = -\frac{1}{2} \checkmark$$

(۲)

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$$\lim_{x \rightarrow 0} \frac{\sqrt{\cos x - 1}}{\sqrt{\cos x + 1}} \times \frac{\sqrt{\cos x + 1}}{\sqrt{\cos x + 1}} \times \frac{\sqrt{\cos x + 1}}{\sqrt{\cos x + 1}} \times \frac{\sqrt{\cos x + 1}}{\sqrt{\cos x + 1}}$$

$$\frac{\sqrt{\cos x - 1}}{\cos x + 1} \times \frac{\sqrt{\cos x + 1}}{\sqrt{\cos x + 1}} = \frac{\sqrt{\cos x - 1}}{\sqrt{\cos x + 1}}$$

رقت! ۱۱

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$$\lim_{x \rightarrow 0} \frac{\sqrt{\cos x - 1}}{\sqrt{\cos x + 1}} \times \frac{\sqrt{\cos x + 1}}{\sqrt{\cos x + 1}} \times \frac{\sqrt{\cos x + 1}}{\sqrt{\cos x + 1}}$$

$$\frac{\sqrt{\cos x - 1}}{\cos x + 1} \times \frac{\sqrt{\cos x + 1}}{\sqrt{\cos x + 1}} = \frac{\sqrt{\cos x - 1}}{\sqrt{\cos x + 1}}$$

HoP

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$$\lim_{x \rightarrow \pi} \frac{1 + \cos x}{\sin^2 x} \rightarrow \frac{(1 + \cos x)(1 + \cos^2 x - \cos x)}{1 - \cos^2 x} = \frac{(1 + \cos x)(1 + \cos^2 x - \cos x)}{(1 - \cos x)(1 + \cos x)}$$

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

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$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \tan x}{\sin x - \cos x} = \frac{\cos x - \sin x}{\sin x - \cos x} = \frac{-1}{1} = -1$$

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$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\sin^2 x - \cos^2 x - \cos x \tan x}{\sin^2 x} = \frac{-\cos x \tan x}{\cos^2 x} = \frac{-1}{1} = -1$$

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