

$$\lim_{n \rightarrow 1} \frac{2n^2 - \sqrt{n} + 1}{5n^2 - 11n + 4} \xrightarrow{\text{h\ddot{o}p}} \frac{1n - 1}{10n - 1} = \frac{1}{2} \checkmark$$

↓
رابطه

(۲)

$$\lim_{n \rightarrow 0} \frac{|2n-1| - |2n+1|}{n} \rightarrow \frac{-2n+1 - (2n+1)}{n} = \frac{-4n}{n} = -4 \checkmark$$

↓
رابطه

$\begin{cases} 2n-1 < 0 \\ 2n+1 > 0 \end{cases}$

(۲)

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

↓
رابطه

(۲)

$$\lim_{n \rightarrow 2} \frac{n - \sqrt{n}}{2n^2 - n - 4} \xrightarrow{\text{h\ddot{o}p}} \frac{1 - \frac{1 \times 2}{2\sqrt{2}}}{4n - 1} \rightarrow \frac{1 - \frac{1}{\sqrt{2}}}{8} = \frac{1 - \frac{1}{\sqrt{2}}}{8} \checkmark$$

(۲)

$$\lim_{n \rightarrow 1} \frac{1 - \sqrt{n}}{4 - \sqrt{5} - n} \xrightarrow{\text{h\ddot{o}p}} \frac{+\left(\frac{1}{2\sqrt{n}}\right)}{+\left(\frac{1 \times -1}{2\sqrt{5-n}}\right)} = \frac{\frac{1}{2}}{\frac{-1}{2}} = -1 \checkmark$$

(۲)

(۵)

$$\lim_{n \rightarrow \infty} \frac{\sqrt{n+1} - 1}{\sqrt{n+1} - 1} \cdot \frac{1}{1} = \frac{n+1-1}{n+1-1} \times \frac{1}{1} = \frac{n}{n} \times \frac{1}{1} = \frac{n(n-1)}{n(n-1)} \times \frac{1}{1}$$

$$\Rightarrow \frac{1 \times 1}{1 \times 1} = \frac{1}{1} \checkmark$$

(1)
✓

$$\lim_{n \rightarrow 1} \frac{\sqrt{n+\sqrt{n}} - 1}{\sqrt{n} - 1} \cdot \frac{1}{1} = \frac{n+\sqrt{n}-1}{n-1} \times \frac{1}{1} = \frac{n-1+\sqrt{n}-1}{n-1} \times \frac{1}{1} \Rightarrow$$

$$\left(1 + \frac{\sqrt{n}-1}{n-1}\right) \times \frac{1}{1} \Rightarrow \left(1 + \frac{\sqrt{n}-1}{(\sqrt{n}-1)(\sqrt{n}+1)}\right) \times \frac{1}{1} = \frac{1}{1} \times \frac{1}{1} = \frac{1}{1} \checkmark$$

(1)
✓

$$\lim_{n \rightarrow \pi} \frac{1+\cos n}{\sin n} \xrightarrow{\text{hop}} \frac{(1+\cos n)(1-\cos n + \cos^2 n)}{(1-\cos n)} = \frac{(1+\cos n)(1-\cos n + \cos^2 n)}{(1-\cos n)(1+\cos n)}$$

$$\Rightarrow \frac{1 - (-1) + (-1)^2}{1 - (-1)} = \frac{1 + 1 + 1}{2} = \frac{3}{2} \checkmark$$

(1)
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$$\lim_{n \rightarrow \frac{\pi}{2}} \frac{1 - \tan n}{\sin n - \cos n} \xrightarrow{\text{hop}} \frac{-(1 + \tan n)}{\cos n + \sin n} = \frac{-1}{\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}} = \frac{-1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{-\sqrt{2}}{\sqrt{2}} = -1 \checkmark$$

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$$\lim_{n \rightarrow \frac{\pi}{2}} \frac{\tan n - 1}{\cos n} \xrightarrow{\text{hop}} \frac{1 \tan n (1 + \tan n)}{-(1 \sin n)} = \frac{1-1(1+1)}{-(-1)} = \frac{-1}{1} = -1 \checkmark$$

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