

(۱)

رفع ابهام

$$\lim_{n \rightarrow 1} \frac{4n^2 - 7n + 3}{8n^2 - 8n + 2} = \frac{0}{0} \Rightarrow \lim_{n \rightarrow 1} \frac{4(n-1)(n-\frac{3}{4})}{8(n-1)(n-\frac{5}{8})} = \frac{4 \times \frac{1}{4}}{8 \times \frac{3}{8}} = \frac{1}{3}$$

حد دراد \rightarrow حد چپ و راست برابر در عدد مشخص است

(۲)

$$\lim_{n \rightarrow 0} \frac{|3n-1| - |3n+1|}{n} = \frac{0}{0}$$

رفع ابهام

$$\begin{aligned} & \frac{+}{-} \Rightarrow \frac{-3n+1 - 3n-1}{n} = \frac{-6n}{n} = -6 \\ & \frac{-}{+} \Rightarrow \frac{-3n+1 - (-3n-1)}{n} = \frac{-6n}{n} = -6 \end{aligned}$$

حد دراد

قد مختلف اول
آرغوا هم خود را بیابید
آید
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در هر دو ساختن خود را
بیابید
 $3n-1 \geq 0 \Rightarrow 3n \geq 1 \Rightarrow n \geq \frac{1}{3}$
 $3n+1 \geq 0 \Rightarrow 3n \geq -1 \Rightarrow n \geq -\frac{1}{3}$

(۳)

$$\lim_{n \rightarrow 4} \frac{n-4}{\sqrt{n}-2} = \frac{0}{0} \Rightarrow \lim_{n \rightarrow 4} \frac{(\sqrt{n}-2)(\sqrt{n}+2)}{(\sqrt{n}-2)} = \lim_{n \rightarrow 4} (\sqrt{n}+2)$$

حد دراد

(۴)

$$\lim_{n \rightarrow 2} \frac{n - \sqrt{2n}}{n^2 - n - 6} = \frac{0}{0} \Rightarrow \lim_{n \rightarrow 2} \frac{n - \sqrt{2n}}{(n+2)(n-3)} = \lim_{n \rightarrow 2} \frac{n - \sqrt{2n}}{(n-2)(n+3)}$$

$$\lim_{n \rightarrow 2} \frac{n + \sqrt{2n}}{n + \sqrt{2n}} = \frac{n(n-2)}{n^2 - 2n} = \frac{1}{n+3} = \frac{1}{5}$$

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زنج با هم با هم

$$\lim_{n \rightarrow 1} \frac{1 - \sqrt{n}}{1 - \sqrt{5-n}} \times \frac{1 + \sqrt{n}}{1 + \sqrt{n}} \times \frac{1 + \sqrt{5-n}}{1 + \sqrt{5-n}} = \frac{1-n}{1-n} \times \frac{1 + \sqrt{5-n}}{1 + \sqrt{n}}$$

- (1-n) - (1-n)

$$= \frac{1}{1} = 1$$

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$$\lim_{n \rightarrow 8} \frac{\sqrt{3n+4} - 4}{\sqrt{5n+7} - 2} = \frac{0}{0} \xrightarrow{\text{زنج با هم}} \frac{\sqrt{3n+4} + 4}{\sqrt{5n+7} + 2} \times \frac{\sqrt{5n+7} + 2}{\sqrt{5n+7} + 2}$$

$$= \frac{(3n+4 - 16)}{(5n+7 - 4)} = \frac{3n-12}{5n-3} = \frac{3 \times (n-4)}{5(n-4)} = \frac{3}{5}$$

حد دار

$$\lim_{n \rightarrow 1} \frac{\sqrt{3+\sqrt{n}} - 2}{\sqrt{n} - 1} = \frac{0}{0} \xrightarrow{\text{زنج با هم}} \lim_{n \rightarrow 1} \frac{\sqrt{3+\sqrt{n}} - 2}{\sqrt{n} - 1} \times \frac{\sqrt{3+\sqrt{n}} + 2}{\sqrt{3+\sqrt{n}} + 2}$$

$$\times \frac{\sqrt{n} + 1}{\sqrt{n} + 1} \Rightarrow \lim_{n \rightarrow 1} \frac{(3+\sqrt{n}-4)(\sqrt{n}+1)}{(n-1)(\sqrt{3+\sqrt{n}}+2)}$$

$$\lim_{n \rightarrow 1} \frac{3 \left[2(\sqrt{n}-1)(\sqrt{n}+1) \right]}{3(\sqrt{n}-1)(\sqrt{n}+1)} = \frac{2}{1}$$

حد دار

$$\lim_{n \rightarrow \pi} \frac{1 + \cos^n n}{\sin^n n} = \frac{1 + \cos n}{1 - \cos n + \cos^n n}$$

(1 - cos n)

$$\frac{1 + \cos n}{(1 - \cos n)(1 + \cos n)} = \frac{1}{1 - \cos n}$$

حد دار

$\cos \pi = -1$

$$= \frac{1}{2}$$

لي $\lim_{x \rightarrow \frac{\pi}{4}} \frac{1 - \tan x}{\sin x - \cos x} = \frac{1 - \frac{\sin x}{\cos x}}{\sin x - \cos x} = \frac{\cos x - \sin x}{\sin x - \cos x}$ (9)

$= \frac{\cos x - \sin x}{-(\sin x - \cos x)} = \frac{\cos x - \sin x}{(\cos x)(\sin x - \cos x)} = \frac{-1}{\cos x} = \frac{-1}{\frac{\sqrt{2}}{2}} = -\frac{2}{\sqrt{2}} = -\frac{\sqrt{2}}{1}$

$= -\sqrt{2}$ 2, 1, 0

لي $\frac{\tan^2 x - 1}{\cos^2 x} = \frac{(\tan x + 1)(\tan x - 1)}{\cos^2 x}$ (10)

~~$= \frac{(\tan x + 1)(\tan x - 1)}{(\tan x + 1)(\tan x - 1)} \cdot \frac{1 - \tan^2 x}{1 + \tan^2 x} = \frac{1 - \tan^2 x}{1 + \tan^2 x}$~~

لي $\lim_{x \rightarrow \frac{\pi}{4}} \frac{\tan^2 x - 1}{\cos^2 x} = \frac{(\tan x + 1)(\tan x - 1)}{\cos^2 x}$ (10)

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

$= \frac{-1}{\cos^2 x} = \frac{-1}{\left(\frac{\sqrt{2}}{2}\right)^2} = \frac{-1}{\frac{2}{4}} = -\frac{4}{2} = -2$

2, 1, 0