

تالیف =

فاطمه شکرینی

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پایزدهم (۸۴)

$$\lim_{n \rightarrow 1} \frac{n^2 - \sqrt{n+3}}{5n^2 - 1n + 3} = \frac{(n-1)(n+3)}{(n-1)(5n-3)} = \frac{n+3}{5n-3} = \frac{1+3}{5-3} = \frac{4}{2} = 2$$

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

$$\begin{matrix} + \\ \rightarrow \end{matrix} \frac{(1-n) - (n+1)}{n} = \frac{-2n}{n} = -2$$

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$$\begin{matrix} - \\ \rightarrow \end{matrix} \frac{(1-n) - (n+1)}{n} = \frac{-2n}{n} = -2$$

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

$\frac{0}{0}$

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$$\lim_{n \rightarrow 4} \frac{n - \sqrt{2n}}{n^2 - n - 6} = \frac{0}{0} \rightarrow \frac{n - \sqrt{2n}}{n^2 - n - 6} \times \frac{n + \sqrt{2n}}{n + \sqrt{2n}} = \frac{n(n-2)}{(n^2 - n - 6)(n + \sqrt{2n})} = \frac{2}{(4-6)(4+3)} = \frac{2}{(-2)(7)} = -\frac{1}{7}$$

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$$\lim_{n \rightarrow 1} \frac{1 - \sqrt{n}}{2 - \sqrt{3-n}} \times \frac{1 + \sqrt{n}}{1 + \sqrt{n}} \times \frac{2 + \sqrt{3-n}}{2 + \sqrt{3-n}} = \frac{1-n}{2-\sqrt{3-n}} \times \frac{2+\sqrt{3-n}}{2+\sqrt{3-n}} = \frac{1-n}{2-\sqrt{3-n}} \times \frac{2+\sqrt{3-n}}{2+\sqrt{3-n}} = -1$$

$\frac{0}{0}$

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$$\lim_{n \rightarrow \infty} \frac{\sqrt[n]{n+\epsilon} - \sqrt[n]{n}}{\sqrt[n]{n+\epsilon} - \sqrt[n]{n}} \times \frac{\sqrt[n]{n+\epsilon} + \sqrt[n]{n}}{\sqrt[n]{n+\epsilon} + \sqrt[n]{n}} \times \frac{\sqrt[n]{(n+\epsilon)^2 + 9} + \sqrt[n]{(n+\epsilon)^2}}{\sqrt[n]{(n+\epsilon)^2 + 9} + \sqrt[n]{(n+\epsilon)^2}} = \frac{\sqrt[n]{n} - 1}{\sqrt[n]{n} - 1} \times \frac{\sqrt[n]{n}}{\sqrt[n]{n}} =$$

$$\frac{\sqrt[n]{n} - 1}{\sqrt[n]{n} - 1} \times \frac{\sqrt[n]{n}}{\sqrt[n]{n}} = \frac{\sqrt[n]{n}}{\sqrt[n]{n}} = 1$$

$$\lim_{n > 1} \frac{\sqrt[n]{n+\sqrt{n}} - \sqrt[n]{n}}{\sqrt[n]{n} - 1} \times \frac{\sqrt[n]{n+\sqrt{n}} + \sqrt[n]{n}}{\sqrt[n]{n+\sqrt{n}} + \sqrt[n]{n}} \times \frac{\sqrt[n]{n^2+1} + \sqrt[n]{n}}{\sqrt[n]{n^2+1} + \sqrt[n]{n}} = \frac{(\sqrt[n]{n}-1)(\sqrt[n]{n+\sqrt{n}})}{\sqrt[n]{n}-1} \times \frac{\sqrt[n]{n}}{\sqrt[n]{n}} =$$

$$\frac{\sqrt[n]{n+\sqrt{n}}}{\sqrt[n]{n}} \times \frac{\sqrt[n]{n}}{\sqrt[n]{n}} = \frac{\sqrt[n]{n+\sqrt{n}}}{\sqrt[n]{n}} = \frac{\sqrt[n]{n}}{\sqrt[n]{n}} = 1$$

$$\lim_{n \rightarrow \infty} \frac{1 + \cos^n n}{\sin^n n} = \frac{0}{0} \rightarrow \frac{(1 + \cos n)(1 + \cos^n n - \cos n)}{(1 - \cos^n n)(1 + \cos n)(1 - \cos n)} = \frac{\sqrt[n]{n}}{\sqrt[n]{n}} = 1$$

$$\lim_{n \rightarrow \frac{\pi}{4}} \frac{1 - \tan n}{\sin n - \cos n} = \frac{0}{0} \rightarrow \frac{1 - \frac{\sin n}{\cos n}}{\sin n - \cos n} = \frac{\cos n - \sin n}{\cos n(\sin n - \cos n)} = \frac{-1}{\cos n} = \frac{-1}{\frac{1}{\sqrt{2}}} = -\sqrt{2}$$

$$\lim_{n \rightarrow \frac{\pi}{4}} \frac{\tan^n n - 1}{\cos^n n} = \frac{0}{0} \rightarrow \frac{\sin^n n - 1}{\cos^n n - \sin^n n} = \frac{\sin^n n - \cos^n n}{\cos^n n - \sin^n n} = \frac{-1}{\frac{1}{\sqrt{2}}} = -\sqrt{2}$$