

$$\lim_{n \rightarrow 1} \frac{fn^2 - \sqrt{n+3}}{an^2 - 1n + 3} = \frac{0}{0} \Rightarrow \lim_{n \rightarrow 1} \frac{(n-1)(fn-3)}{(n-1)(an-3)} = \lim_{n \rightarrow 1} \frac{fn-3}{an-3} = \frac{1}{2}$$

$$\frac{fn^2 - \sqrt{n+3}}{an^2 - 1n + 3} \Big| \frac{n-1}{fn-3} \quad \frac{an^2 - 1n + 3}{an-3} \Big| \frac{n-1}{an-3}$$

$$\frac{-fn+3}{-fn+3} \quad \frac{-an+3}{-an+3}$$

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$$\lim_{x \rightarrow 0} \frac{|\sqrt{x-1}| - |\sqrt{x+1}|}{x} = \lim_{x \rightarrow 0} \frac{-(\sqrt{x-1}) - \sqrt{x+1}}{x} = \lim_{x \rightarrow 0} \frac{-4x}{x} = -4$$

$x \rightarrow 0 \Rightarrow \sqrt{x-1} < 0$
 $x \rightarrow 0 \Rightarrow \sqrt{x+1} > 0$

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$$\lim_{n \rightarrow 4} \frac{n-4}{\sqrt{n}-2} = \frac{0}{0} \Rightarrow \lim_{n \rightarrow 4} \frac{(\sqrt{n}-2)(\sqrt{n}+2)}{(\sqrt{n}-2)} = \lim_{n \rightarrow 4} (\sqrt{n}+2) = 6$$

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$$\lim_{n \rightarrow 2} \frac{n - \sqrt{2n}}{n^2 - x - 4} = \frac{0}{0} \Rightarrow \lim_{n \rightarrow 2} \frac{n - \sqrt{2n}}{(n-2)(n+3)} \times \frac{n + \sqrt{2n}}{n + \sqrt{2n}} = \frac{n^2 - 2n}{(n-2)(n+3) \cdot 2} \Rightarrow \lim_{n \rightarrow 2} \frac{n(n-2)}{(n-2)(n+3) \cdot 2}$$

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

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$$\lim_{n \rightarrow 1} \frac{1 - \sqrt{n}}{1 - \sqrt{a-n}} = \frac{0}{0} \xrightarrow{\frac{f}{f'}} \frac{1 - \sqrt{n}}{1 - \sqrt{a-n}} \times \frac{1 + \sqrt{a-n}}{1 + \sqrt{a-n}} = \frac{(1 - \sqrt{n})(1)}{1 - a + n} \Rightarrow$$

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

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$$\lim_{n \rightarrow \infty} \frac{\sqrt{kn+f} - f}{\sqrt{an+v} - r} \times \frac{\sqrt{kn+f} + f}{\sqrt{kn+f} + f} \times \frac{\sqrt{(an+v)^r + r\sqrt{an+v} + 9}}{\sqrt{(an+v)^r + r\sqrt{an+v} + 9}} = \frac{kn+f-14}{an+v-rv} \times \frac{rv}{1} = \frac{kn-14}{an-r} \times \frac{rv}{1}$$

$$= \frac{r(n-f)}{a(n-f)} \times \frac{rv}{1} = \left(\frac{11}{f_0} \right)$$

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$$\lim_{n \rightarrow 1} \frac{\sqrt{kn+\sqrt{n}} - f}{\sqrt{n} - 1} = \frac{0}{0} \Rightarrow \frac{\sqrt{kn+\sqrt{n}} - f}{\sqrt{n} - 1} \times \frac{\sqrt{kn+\sqrt{n}} + f}{\sqrt{kn+\sqrt{n}} + f} \times \frac{\sqrt{n} + \sqrt{n+1}}{\sqrt{n} + \sqrt{n+1}}$$

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$$\frac{kn+\sqrt{n}-f}{n-1} \times \frac{r}{f} \xrightarrow{\text{hop}} \lim_{n \rightarrow 1} \frac{r + \frac{1}{r\sqrt{n}}}{1} \times \frac{r}{f} = \left(\frac{r}{1} \right)$$

$$\lim_{n \rightarrow \pi} \frac{1 + \cos^r n}{\sin^r n} = \frac{0}{0} \Rightarrow \lim_{n \rightarrow \pi} \frac{(1 + \cos n)(1 - \cos n + \cos^r n)}{1 - \cos^r n} = \lim_{n \rightarrow \pi} \frac{(1 + \cos n)(1 - \cos n + \cos^r n)}{(1 - \cos n)(1 + \cos n)}$$

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$$= \lim_{n \rightarrow \pi} \frac{(1 - \cos n + \cos^r n)}{(1 - \cos n)} = \left(\frac{r}{r} \right)$$

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

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$$\rightarrow \frac{-r}{\sqrt{r}} \times \frac{\sqrt{r}}{\sqrt{r}} = \left(-\sqrt{r} \right)$$

$$\lim_{n \rightarrow \frac{\pi}{2}} \frac{\tan^r n - 1}{\cos^r n} = \frac{0}{0} = \lim_{n \rightarrow \frac{\pi}{2}} \frac{\frac{\sin^r n}{\cos^r n} - 1}{\cos^r n - \sin^r n} = \lim_{n \rightarrow \frac{\pi}{2}} \frac{\frac{\sin^r n - \cos^r n}{\cos^r n}}{\cos^r n - \sin^r n} = \lim_{n \rightarrow \frac{\pi}{2}} \frac{-1}{\cos^r n} = \frac{-1}{\frac{1}{r}} = \left(-r \right)$$

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