

$$\lim_{n \rightarrow 1} \frac{\epsilon x^2 - \sqrt{n+3}}{\omega n^2 - \lambda n + \mu} = \frac{0}{0} \xrightarrow{\text{زیچ پھیل}} \frac{(\epsilon n - 3)(n-1)}{(\omega n - 3)(n-1)} = \frac{\epsilon n - 3}{\omega n - 3} \xrightarrow{n=1} \boxed{\frac{1}{2}}$$

1 (5)

$$\frac{0}{0} \xrightarrow{\text{زیچ پھیل}} \frac{-\mu_{2n+1} - \mu_{2n-1}}{2} = \frac{-4n}{2} = -2$$

2 (5)

$$\frac{0}{0} \xrightarrow{\text{زیچ پھیل}} \frac{(\sqrt{n-2})(\sqrt{n+2})}{\sqrt{n}-2} = \sqrt{n+2} \xrightarrow{n=\epsilon} 2+2 = \boxed{\epsilon}$$

3 (5)

$$\frac{0}{0} \xrightarrow{\text{زیچ پھیل}} \frac{n - \sqrt{2n}}{\sqrt{n^2 - n - 4}} \times \frac{n + \sqrt{2n}}{n + \sqrt{2n}} = \frac{n^2 - 2n}{\sqrt{n^2 - n - 4}} \times \frac{1}{\epsilon} \Rightarrow \frac{n(n-2)}{(n-2)(\sqrt{n+3})} \times \frac{1}{\epsilon} \xrightarrow{n=2} \frac{2}{\sqrt{5}} \times \frac{1}{\epsilon} = \boxed{\frac{1}{1\epsilon}}$$

4 (5)

$$\frac{0}{0} \xrightarrow{\text{زیچ پھیل}} \frac{1 + \sqrt{n}}{1 - \sqrt{\omega - n}} \times \frac{1 + \sqrt{n}}{1 + \sqrt{n}} \times \frac{1 + \sqrt{\omega - n}}{1 + \sqrt{\omega - n}} = \frac{1 + \sqrt{n}}{n-1} \times \frac{\epsilon}{\epsilon} = \frac{1}{\epsilon} \times \frac{\epsilon}{\epsilon}$$

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$$\lim_{n \rightarrow \infty} \frac{-\frac{1}{\sqrt{n}}}{\frac{1}{\sqrt{\omega - n}}} \xrightarrow{n=1} \frac{-\frac{1}{2}}{\frac{1}{\epsilon}} = \boxed{-\frac{1}{2}}$$

(5)

$$\frac{0}{0} \xrightarrow{\frac{0}{0}} \frac{\sqrt{r^2 n + \varepsilon} - \varepsilon}{\sqrt{a n + v} - r} \times \frac{\sqrt{r^2 n + \varepsilon} + \varepsilon}{\sqrt{a n + v} + r} \times \frac{\sqrt{(a n + v)^2 + a} + r \sqrt{a n + v}}{\sqrt{(a n + v)^2 + a} - r \sqrt{a n + v}} = \frac{r^2 n + \varepsilon - \varepsilon^2}{a n + v - r^2} \times \frac{a}{1} = \frac{r^2 n + \varepsilon - \varepsilon^2}{a n + v - r^2} \times \frac{a}{1} = 1, 0$$

$$\frac{r^2(n-\varepsilon)}{a(n-\varepsilon)} \times \frac{a}{a} = \frac{r^2}{a} \times \frac{a}{a} = \frac{r^2}{a} \times \frac{1}{r_0} = \frac{1}{r_0}$$

$$\frac{0}{0} \xrightarrow{\frac{0}{0}} \frac{r^2 n + \sqrt{n} - r}{n-1} \times \frac{1}{r} \xrightarrow{\text{hop}} \frac{r^2 + \frac{1}{\sqrt{n}}}{r} \times \frac{1}{r} \xrightarrow{n=1} \left(r^2 + \frac{1}{r}\right) \times \frac{1}{r} = \frac{r^2}{r} \times \frac{1}{r} = \frac{r}{r} = 1$$

v) $\frac{0}{0} \xrightarrow{\frac{0}{0}} \lim_{n \rightarrow 1} \frac{\sqrt{r^2 n + \sqrt{n}} - r}{\sqrt{n} - 1} \times \frac{\sqrt{r^2 n + \sqrt{n}} + r}{\sqrt{r^2 n + \sqrt{n}} + r} \times \frac{1}{r}$

hop $\rightarrow \frac{r^2}{r} \times \frac{1}{r} = \frac{r^2}{r^2} = 1$

$$\frac{0}{0} \xrightarrow{\frac{0}{0}} \frac{(1 + \cos n)(1 + \cos^2 n - \cos n)}{(1 - \cos^2 n)} = \frac{(1 + \cos^2 n - \cos n)}{1 - \cos n} \xrightarrow{n=\pi} \frac{1 + (-1)^2 - (-1)}{1 - (-1)} = \frac{1 + 1 + 1}{1 + 1} = \frac{3}{2}$$

$(1 - \cos^2 n) \downarrow (1 - \cos n)(1 + \cos n)$

$$\frac{0}{0} \xrightarrow{\frac{0}{0}} \frac{1 - \frac{\sin n}{\cos n}}{\sin n - \cos n} = \frac{\frac{\cos n - \sin n}{\cos n}}{-(\cos n - \sin n)} = \frac{-1}{\cos n} \xrightarrow{n=\frac{\pi}{2}} \frac{-1}{\frac{\sqrt{2}}{2}} = -\frac{2}{\sqrt{2}} = -\sqrt{2}$$

$$\frac{0}{0} \xrightarrow{\frac{0}{0}} \frac{\frac{\sin^2 n}{\cos^2 n} - 1}{\cos^2 n} = \frac{\frac{\sin^2 n - \cos^2 n}{\cos^2 n}}{\cos^2 n - \sin^2 n} = \frac{-1}{\cos^2\left(\frac{\pi}{4}\right)} = \frac{-1}{\left(\frac{\sqrt{2}}{2}\right)^2} = \frac{-1}{\frac{1}{2}} = -2$$