

مؤلف: محمد حسن  
 مدرس: محمد حسن  
 (20)

$$\textcircled{1} \lim_{x \rightarrow 1} \frac{\varepsilon n^r - \sqrt{x} + r}{\omega n^r - \lambda x + r} = \frac{(n-1)(\varepsilon n - r)}{(n-1)(\omega n - r)} = \frac{\varepsilon n - r}{\omega n - r} = \frac{1}{r}$$

$$\textcircled{2} \lim_{x \rightarrow 0} \frac{|\sqrt{x} - 1| - |\sqrt{x} + 1|}{x} = \frac{1 - \varepsilon n - \varepsilon n - 1}{n} = \frac{-4n}{n} = -4$$

$$\textcircled{3} \lim_{x \rightarrow \infty} \frac{x - \varepsilon}{\sqrt{x} - r} = \frac{(\sqrt{x} + r)(\sqrt{x} - r)}{\sqrt{x} - r} = \sqrt{x} + r = \varepsilon$$

$$\textcircled{4} \lim_{x \rightarrow r} \frac{x - \sqrt{r}}{r n^r - x - r} = \frac{1 - \frac{r}{\sqrt{r}}}{\varepsilon n - 1} = \frac{1 - \frac{r}{\varepsilon}}{v} = \frac{1}{1\varepsilon}$$

$$\textcircled{5} \lim_{x \rightarrow 1} \frac{1 - \sqrt{x}}{r - \sqrt{\omega - x}} \xrightarrow{\text{L'Hopital}} \frac{\frac{0}{0}}{\frac{0}{0}} \propto \frac{r r'}{r r'} = \frac{1 - n}{\varepsilon - \omega + n} \propto \frac{\varepsilon}{r} = \frac{-r(n-1)}{n-1} = -r$$

$$\textcircled{6} \lim_{x \rightarrow \infty} \frac{\sqrt{r n^r} - \varepsilon}{\sqrt{\omega n + r} - r} \propto \frac{0}{0} \propto \frac{r v}{r v} = \frac{r n^r \varepsilon - r}{\omega n + r - r} \propto \frac{r}{\omega(n \varepsilon)} \propto \frac{r}{\varepsilon}$$

$$\textcircled{7} \lim_{x \rightarrow 1} \frac{\sqrt{r n + r} - r}{r \sqrt{n} - 1} \xrightarrow{\text{L'Hopital}} \frac{0}{0} \propto \frac{r n + r - \varepsilon}{n - 1} \propto \frac{r}{\varepsilon} = \frac{(\varepsilon \sqrt{n} + \varepsilon)(\sqrt{n} - 1)}{(\sqrt{x} - 1)(\sqrt{x} + 1)} \propto \frac{r}{\varepsilon} = \frac{r}{n}$$

$$\textcircled{8} \lim_{x \rightarrow \pi} \frac{1 + \cos^r x}{\sin^r x} = \frac{(\cos^r x + 1)(\cos^r x - \cos^r x)}{(1 - \cos^r x)(1 + \cos^r x)} = \frac{1 + 1}{r} = \frac{r}{r}$$

$$\textcircled{9} \lim_{x \rightarrow \frac{\pi}{2}} \frac{1 - \tan^r x}{\sin^r x - \cos^r x} = \frac{-\sin^r x + \cos^r x}{\sin^r x - \cos^r x} = \frac{-1}{\cos^r x} = \frac{-1}{\frac{\sqrt{r}}{r}} = -\sqrt{r}$$

$$\textcircled{10} \lim_{x \rightarrow \frac{\pi}{4}} \frac{\tan^r x - 1}{\cos^r x} = \frac{\sin^r x - \cos^r x}{\cos^r x} = \frac{-1}{\cos^r x} = \frac{-1}{\frac{1}{r}} = -r$$