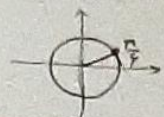


1- $f(u) = r \left[\frac{r-u}{r} \right] + a \left[\frac{u+r}{r} \right]$ $\xrightarrow{-r^+} f(1) + a(r) = r$
 $\xrightarrow{-r^-} f(-a) = r \Rightarrow a = r \Rightarrow \left[\frac{r}{r} \right] = 1$

2- $\lim_{u \rightarrow \frac{\pi}{2}^-} [r \sin u - 1]$ $\lim_{u \rightarrow \frac{\pi}{2}^-} [\cdot] = -1$

 $\sin u < 1 \Rightarrow r \sin u < r$
 $r \sin u - 1 < r - 1$

3- $\lim_{u \rightarrow -\frac{1}{r}} [ru^r - u]$ $y'(u) = r \varepsilon u^{r-1} - 1 \xrightarrow{u = -\frac{1}{r}} y'(-\frac{1}{r}) = 0 \Rightarrow \lim_{u \rightarrow -\frac{1}{r}} f(u) = -1$

4- $\lim_{u \rightarrow -\frac{1}{r}} \frac{1-u-a + \left[\frac{r}{u} \right]}{19u - \left[-\frac{r}{u} \right]}$ $u < -\frac{1}{r} \Rightarrow u^r > \frac{1}{r} \Rightarrow \frac{1}{u^r} < r$
 $\Rightarrow \frac{1}{0} = -\infty$ $\xrightarrow{u \rightarrow -\frac{1}{r}} \frac{r}{u^r} < r$
 $\frac{r}{u^r} > -1 \Rightarrow \lim_{u \rightarrow -\frac{1}{r}} \frac{1-u-a+11}{19u+1} = \lim_{u \rightarrow -\frac{1}{r}} \frac{1-u+a}{19u+1}$

5- $\lim_{u \rightarrow 1^-} \frac{2-r \sin u}{1+\cos \pi u} \Rightarrow \lim_{u \rightarrow 1^-} \frac{(1-\cos^r \pi u)}{1+\cos \pi u} \Rightarrow \lim_{u \rightarrow 1^-} 1 - \cos \pi u = r$

6- $\lim_{u \rightarrow -1} \frac{\sqrt{ru+r} - \sqrt{ru+r}}{1+\sqrt{ru}} \xrightarrow{\text{hop}} \frac{\frac{r}{\sqrt{ru+r}} - \frac{r}{\sqrt{ru+r}}}{\frac{1}{r\sqrt{ru}}} = \frac{\frac{r}{r} - \frac{r}{r}}{\frac{1}{r}} = \frac{-\frac{1}{r}}{\frac{1}{r}} = -\frac{r}{r}$

7- $\lim_{u \rightarrow 1} \frac{ru - \sqrt{ru+1} + \omega}{ru - \sqrt{ru+1}} \xrightarrow{\text{hop}} \frac{r - \frac{1}{\sqrt{ru+1}}}{r - \frac{1}{\sqrt{ru+1}}} = \frac{r - \frac{1}{r}}{r - \frac{1}{r}} = \frac{-\frac{1}{r}}{\frac{1}{r}} = -\frac{1}{r} = -1/r$

8- $\lim_{u \rightarrow 0} \frac{a + \sqrt{b \sin u - c}}{u} = \frac{1}{\varepsilon}$ $\left. \begin{array}{l} \text{مخرج} \\ \lim f(u) \neq 0 \end{array} \right\} \rightarrow \text{صورت}$
 $a + \sqrt{c} = 0 \Rightarrow \sqrt{c} = -a \Rightarrow a < 0$
 $\xrightarrow{\text{hop}} \frac{b}{r\sqrt{b \sin u - c}} = \frac{1}{\varepsilon} \Rightarrow \frac{b}{\sqrt{c}} = \frac{1}{r} \Rightarrow r b > \sqrt{c}$
 $b > \frac{\sqrt{c}}{r}$

9- $\lim_{u \rightarrow -r} \frac{f + u \left[\frac{u}{\pi} \right]}{\sin u} = +\infty$ $\xrightarrow{-r\pi^+} u > -r\pi \Rightarrow \frac{u}{\pi} > -r \Rightarrow \frac{f - ru}{\sin u} = \frac{f - ru}{\varepsilon^+} \Rightarrow \varepsilon - ru > 0$
 $\xrightarrow{-r\pi^-} u < -r\pi \Rightarrow \frac{u}{\pi} < -r \Rightarrow \frac{\varepsilon - ru}{\sin u} = \frac{f - ru}{\varepsilon^-} \Rightarrow \varepsilon - ru < 0$
 $\left. \begin{array}{l} \frac{f}{r} < u < r \\ -\frac{\varepsilon}{r} > -u > r \end{array} \right\} \Rightarrow [-u] = -r$

10- $\lim_{u \rightarrow 1} \frac{b \sqrt{r + \sqrt{u}} - rb}{a \sqrt{u} - b}$ $\xrightarrow{\text{صورت}} \text{مخرج}$
 $am - b = 0 \Rightarrow a = \frac{b}{m} \Rightarrow \lim_{u \rightarrow 1} \frac{b(\sqrt{r + \sqrt{u}} - r)}{\frac{1}{m}u - 1}$

$\lim_{u \rightarrow 1} \frac{(\sqrt{r + \sqrt{u}} - r)(\sqrt{r + \sqrt{u}} + r)}{(\frac{1}{m}u - 1)(\sqrt{r + \sqrt{u}} + r)} = \lim_{u \rightarrow 1} \frac{(r + \sqrt{u} - \varepsilon) \times \Lambda}{(\frac{1}{m}u - 1) \times \Lambda \times F} = \frac{(\sqrt{u} - r) \times \Lambda}{(u - 1) \times \varepsilon} = \frac{r}{1r} = \frac{1}{r}$
 $u = 1 \Rightarrow r$ $\sqrt{u} = 1$