

$$\Delta = 0 \Rightarrow (m-3)^2 - 12m = 0 \Rightarrow m^2 - 4m + 9 = 0 \Rightarrow m = 3$$

$$r m^2 + a^2 \xrightarrow{u=a} r a^2 + a^2 = 0 \Rightarrow a = -\frac{1}{r}$$

$$\lim_{m \rightarrow \frac{1}{2}} \sqrt{4(m+\frac{1}{2})^2} = \frac{\sqrt{9}}{\frac{1}{2}} = \frac{2\sqrt{9}}{1} \quad \frac{r \tan b}{\sqrt{-m}} \xrightarrow{u=a} \frac{r \tan b}{\frac{1}{\sqrt{r}}} = \frac{2\sqrt{9}}{1}$$

$$\Rightarrow 2\sqrt{r} \tan b = \frac{2\sqrt{9}}{1} \Rightarrow \tan b = \frac{\sqrt{9}}{\sqrt{r}} \xrightarrow{0 < b < \pi} b = \frac{\pi}{4}$$

2. $u^2, a, u+b$: برای اینکه حد موجود باشد باید یکی از ریشه های صورت، ریشه منجم باشد:

$$= (u-1)(u+k)$$

$$\Rightarrow u=1 \text{ ریشه} \Rightarrow \omega(1) - a + b = 0 \Rightarrow a-b = a \quad (I)$$

$$u=1 \text{ ریشه} \Rightarrow 1 + a + b = 0 \Rightarrow a+b = -1 \quad (II) \quad \xrightarrow{I, II} a=2 \quad b=-3$$

$$\Rightarrow \left[\frac{b-1a}{3} \right] = \left[\frac{-3-2}{3} \right] = -1$$

همچنین چون اشاره شده که در ۱ پیوسته نباشد یعنی حد تابع در نقطه ۱ ریشه منجم

منظور می شود

$$3. u \leq 1 \Rightarrow \tan \frac{3\pi}{8}, u > 1 \Rightarrow \frac{(u+2)(u-1)}{a(1-u)} = \frac{u+2}{-a} \Rightarrow \frac{u+2}{-a} = -1$$

$$(1)+2 = a \Rightarrow a=3$$

$$u < 2 \Rightarrow \frac{(u+2)(u-1)}{a(1-u)} = \frac{u+2}{-a}, u \geq 2 \Rightarrow b(11) \Rightarrow \frac{2+2}{3} = 11b \Rightarrow b = \frac{4}{11}$$

$$\Rightarrow ab = 3 \left(\frac{4}{11} \right) = \frac{12}{11}$$

$$4. a[u] + a + bu + b[a+1] \quad \begin{matrix} u \rightarrow a^+ & a+b[a]+b \\ & \searrow \\ & -a+a-b+b[a]+b \\ u \rightarrow a^- & \end{matrix} \quad \left. \begin{matrix} a+b[a]+b \\ -b[a] \end{matrix} \right\} = b[a]$$

$$a+b=0 \\ b=-a$$

$$f(a) = a[a] + a - a[a] - a[a] - a = -a[a]$$

$$\frac{a[a]}{f(a)} = \frac{a[a]}{-a[a]} = -1$$

5. $b(u^r, au) - ra$ $\xrightarrow{\text{نقطة ٥}} b \rightarrow f(u) = -ra$

$$\frac{a}{f(u)} = \frac{a}{-ra} = -\frac{1}{r}$$

6. $\lim_{u \rightarrow a} f(u) = r \Rightarrow$ $\lim_{u \rightarrow a} f(u) = r \Rightarrow a^r, am, n =$

$$f(u) = r \Rightarrow ra^r, rma, n = \Rightarrow f(u), (u-a)(u-ra), -(u-ra)$$

$$\Rightarrow u-a \Rightarrow -(a-ra), r \Rightarrow a, r$$

$$(u-a)(u-ra) = u^r - rau + ra^r - u^r, m, n \quad \begin{matrix} m: -ra \rightarrow m: -4 \\ n: ra^r \rightarrow n: 1 \end{matrix}$$

$$n-m = 1 - (-4) = 5$$

7. $u = 0^+ \rightarrow (1-a)(0) + (ra^r-1)(1) = 1-ra^r \quad u = 0 \Rightarrow b \sin(\frac{\pi}{a})$

$$u = 0^- \rightarrow (1-a)(1) + (ra^r-1)(0) = a-1 \xrightarrow{\text{نقطة ٥}} 1-ra^r, a-1 \rightarrow a = -1$$

$$a = -1 \Rightarrow b \sin(\frac{\pi}{a}), b \sin(\pi) = 0 \quad \text{GUE} \quad a = \frac{r}{r} \Rightarrow b \sin(\frac{r\pi}{r}) = -b$$

$$a-1 = 1-ra^r = -r$$

$$a-1 = 1-ra^r = -\frac{1}{r} \Rightarrow b = \frac{1}{r}$$

$$\Rightarrow \frac{a}{b} = \frac{r}{\frac{1}{r}} = r$$

8. $\frac{|u-1||u+m+1|}{|u-1|(m|u+1|+1)} \xrightarrow{u=1} \frac{|m+1|}{r m+1} = \frac{m}{m+r}$

$$m < -r \Rightarrow -m^r - \varepsilon m - r = r m^r, m \Rightarrow r m^r, \Delta m + \varepsilon = 0 \Rightarrow \Delta < 0 \text{ GUE}$$

$$m > -r \Rightarrow m^r + \varepsilon m + r = r m^r, m \Rightarrow m^r - r m - r = 0 \quad \begin{matrix} m < r \text{ (1)} \\ (m-r)(m+1) < 0 \\ m < -1 \text{ (2)} \end{matrix}$$

① $\lim_{u \rightarrow \frac{1}{2}} f(u) = \frac{1 \cdot \frac{1}{2} \cdot \frac{1}{2} + 1}{(\frac{1}{2} \cdot \frac{1}{2} + 1)} = \frac{\frac{r}{r}}{\frac{19}{19}} = \frac{r}{19}$

② $\lim_{u \rightarrow -1} f(u) = \frac{1-1-1+1}{(-1-1+1)} = 1$

9. $\lim_{u \rightarrow a} f(u) = \sqrt{r} |a^r, a| = 0 \quad a(a+1) = 0 \quad \begin{matrix} a = 0 \\ a = -1 \end{matrix} \quad \text{نقطة ٥} \Rightarrow \text{GUE}$

$$a = -1 \Rightarrow f(u) = \frac{\sqrt{r} |u-1|}{|u^r - (r-r)u^r + 1|} = \frac{\sqrt{r} |u+1|}{|u^r + 1|}$$

$$\xrightarrow{\text{نقطة ٥}} \frac{1-1-1+1}{(-1-1+1)} = 1 \Rightarrow m < r$$

$$\Rightarrow \lim_{u \rightarrow -1} f(u) = \frac{0}{0} \quad (\text{نقطة ٥}) \Rightarrow \lim_{u \rightarrow -1} f(u) = \frac{\sqrt{r}}{r} = \frac{\sqrt{r}}{r}$$

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$$10. \quad u \rightarrow 0^+ \quad \frac{u(u+1)}{u(u+a)}, \quad \frac{u+1}{u+a} \sim \frac{1}{a} \quad u \rightarrow 0^- \quad \frac{u(u-1)}{u(u-a)}, \quad \frac{1}{a}$$

$$\frac{1}{a} + \frac{ra-1}{ra+r} \Rightarrow ra+r, \quad ra^r-a \Rightarrow ra^r-ra-r, \quad a^r-ra-\varepsilon, \quad (a-\varepsilon)(a+1) \sim 0 \quad \begin{matrix} a=r \\ a=\frac{1}{r} \end{matrix}$$

$$a=r \quad \lim_{u \rightarrow \frac{1}{r}} f(u), \quad \frac{\frac{1}{r}+1}{\frac{1}{r}+r} = \frac{r}{a}$$

$$\lim_{u \rightarrow -r} f(u), \quad \frac{r+1}{r-\frac{1}{r}} = \frac{r}{r} = r$$