

Subject:

Year. Month. Date. ()

$$f(x) \rightarrow D_{f(x)} = [-r, \varepsilon]$$

(1)

$$f\left(\frac{r_{n+1}}{\omega}\right) \rightarrow -r \leq \frac{r_{n+1}}{\omega} \leq \varepsilon \rightarrow -1 \leq r_{n+1} \leq \varepsilon \rightarrow -1 \leq r_n \leq 1$$

$$-2 \leq r_n \leq 4 \rightarrow D_f = [-2, 4]$$

$$f(r_n - r) \rightarrow D = [-r, \varepsilon]$$

(2)

$$r_n - r \rightarrow r_n - r - r = -1$$

$$r_n = r \rightarrow r_n - r = 0$$

$$D_f = [-1, 0]$$

$$f\left(\frac{r_{n+1}}{r}\right) \rightarrow D = [-1, r]$$

(3)

$$r_n = -1 \rightarrow \frac{r_n - 1 + 1}{r} = -1$$

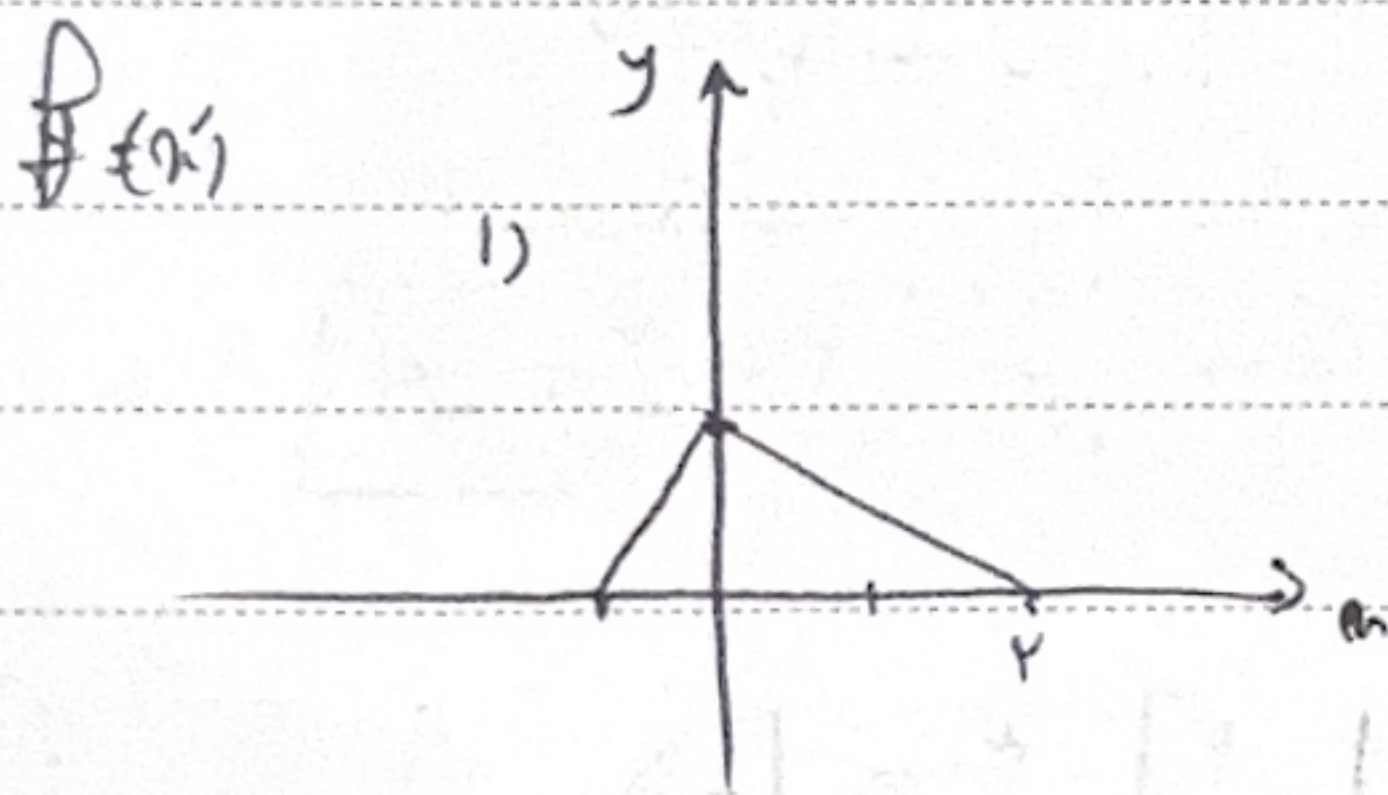
$$r_n = r \rightarrow \frac{r_n - r + 1}{r} = \omega$$

$$f(x) \rightarrow D_f = [-1, \omega]$$

$$-1 \leq r - \omega n \leq \omega \rightarrow -\omega \leq \omega n - r \leq 1$$

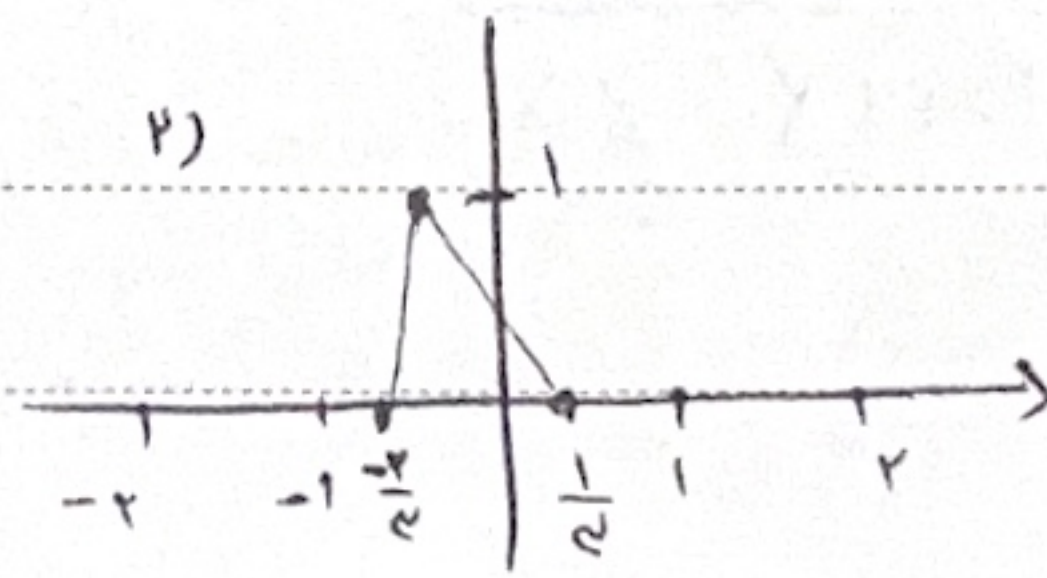
$$-r \leq \omega n \leq r \rightarrow -\frac{r}{\omega} \leq n \leq \frac{r}{\omega}$$

$$D_{f(r-\omega n)} = \left(-\frac{r}{\omega}, \frac{r}{\omega}\right]$$



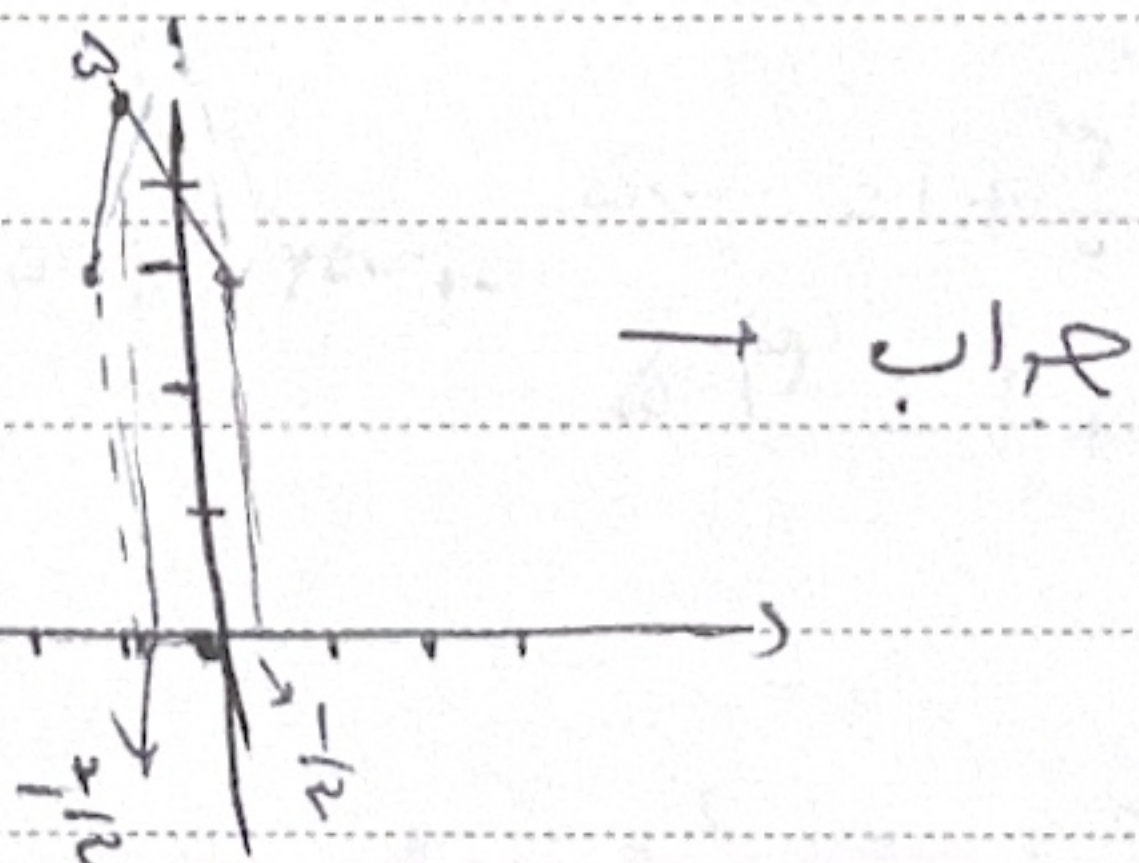
$$f\left(\frac{r_{n+1}}{r}\right) \rightarrow -1 \leq \frac{r_{n+1}}{r} \leq \varepsilon \rightarrow -\frac{r}{r} \leq r_n \leq \frac{1}{r}$$

(4)

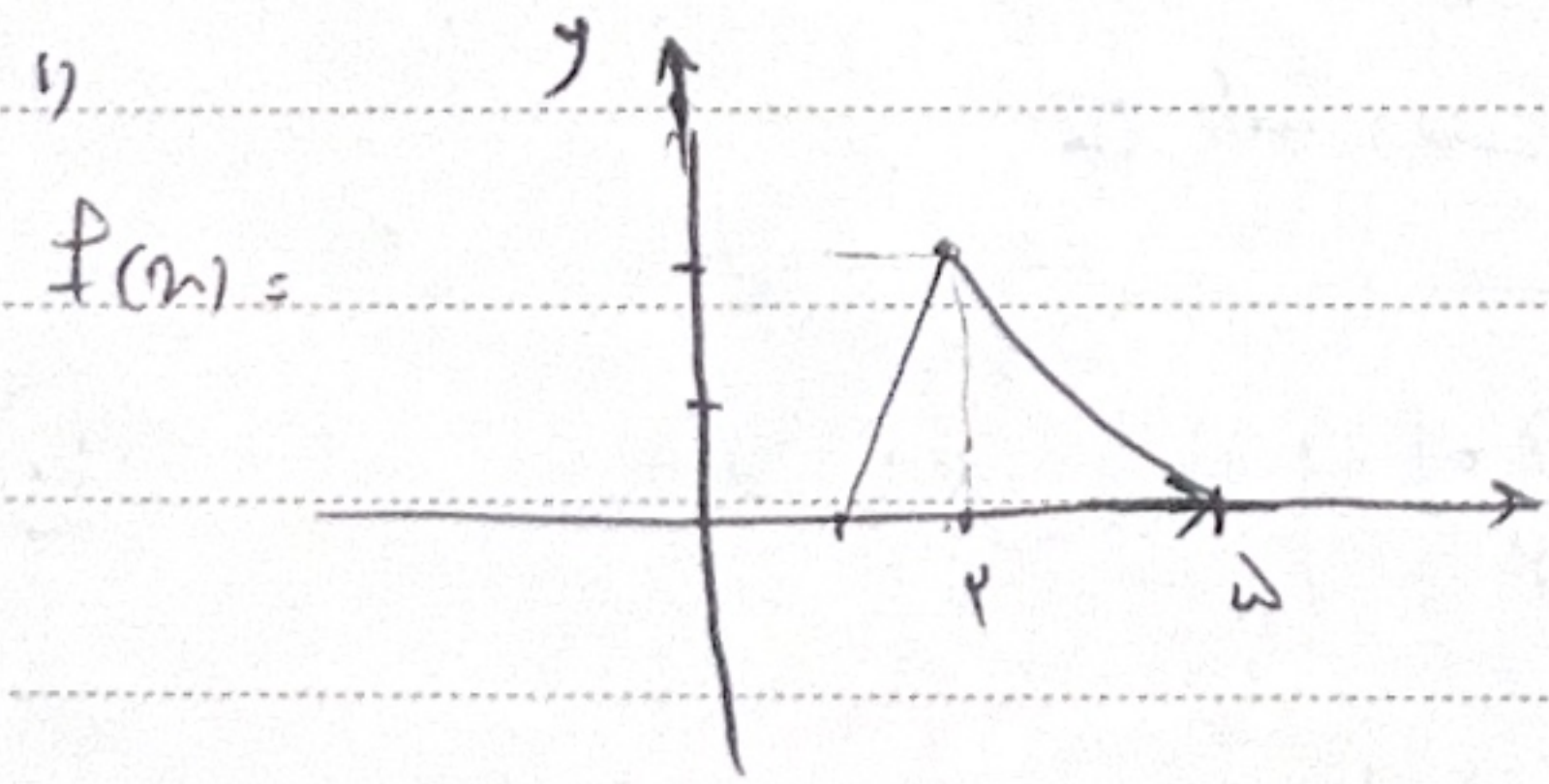


$$r f\left(\frac{r_{n+1}}{r}\right) + r \rightarrow r \times [-1, \varepsilon] + r = [-r, \omega]$$

(3)



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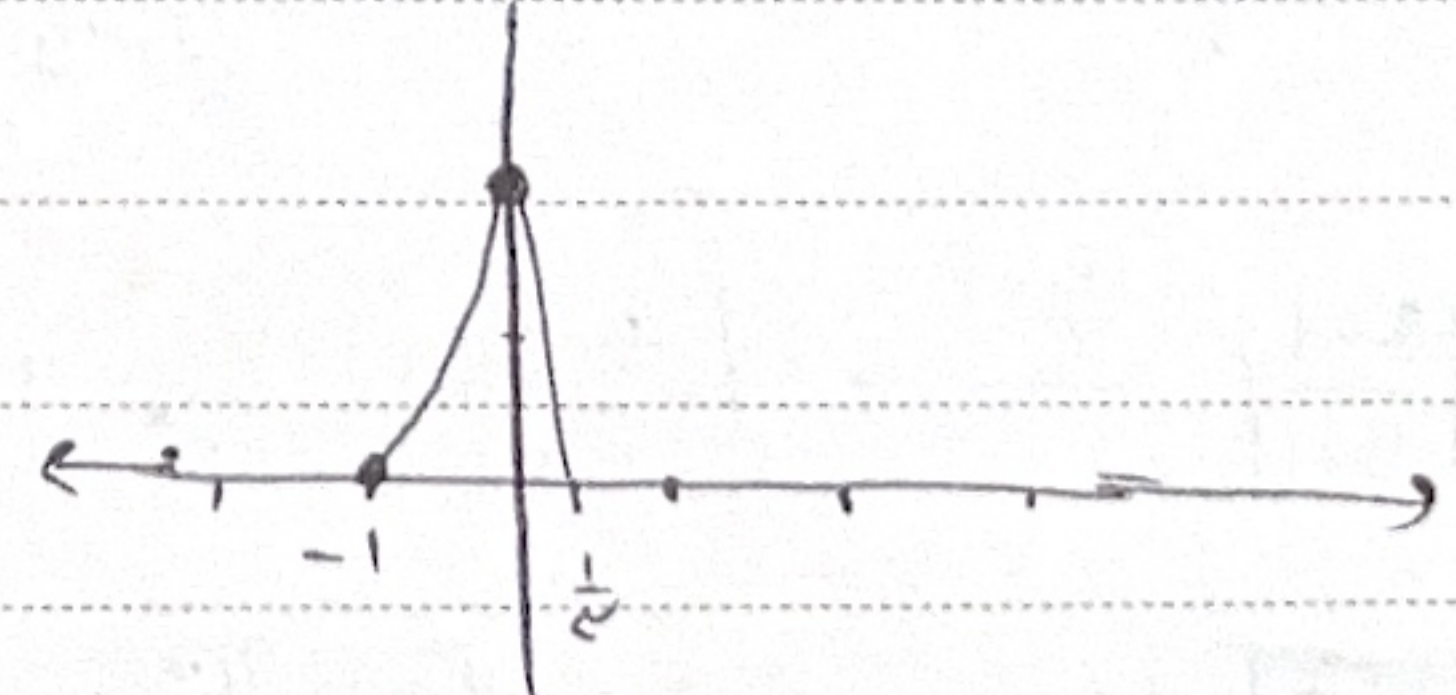
$$f(r - r_n)$$

$$1 \leq r - r_n \leq \omega$$

$$-1 \leq r_n - r \leq -1$$

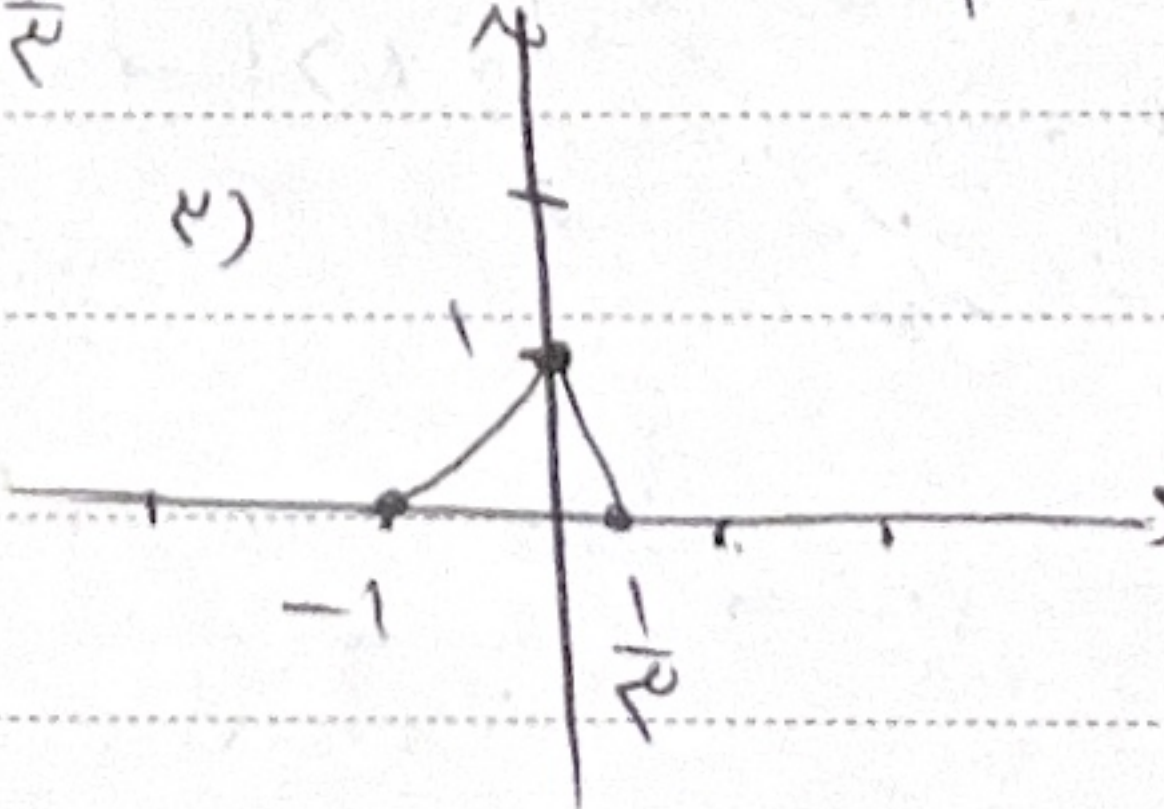
$$-r \leq r_n \leq 1$$

$$-1 \leq r_n \leq \frac{1}{r}$$



$$\frac{1}{r} f(r - r_n) \rightarrow \frac{1}{r} [-1, r] = [-1, 1]$$

(3)



④

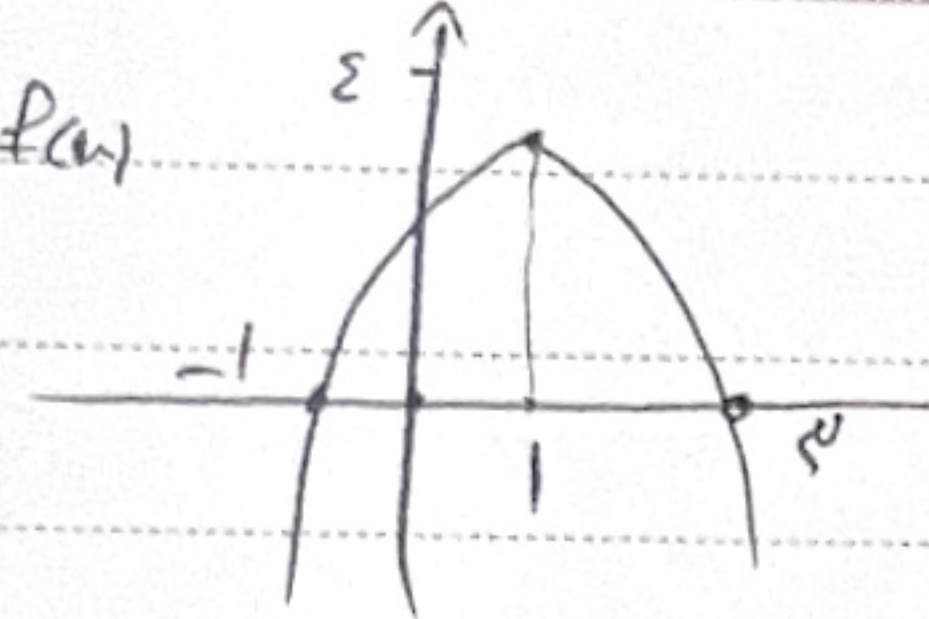
$$y = -\frac{1}{p}x^2 + \frac{r}{2}x + 1 \rightarrow \text{ext} \left| \begin{array}{c} \frac{r}{2} \\ \frac{r}{2} \end{array} \right| \rightarrow \left(\frac{r}{2}, \frac{r}{2} \right) \xrightarrow{\text{int}} (\varepsilon, \nu)$$

$$-\frac{1}{p} \left(x - \frac{r}{2} \right)^2 + \frac{r}{2} \xrightarrow{\text{int}} -\frac{1}{p} (x - \varepsilon)^2 + \nu = -\frac{1}{p} (x^2 - 2x + 1) + \nu$$

$$-\frac{1}{p}x^2 + \frac{1}{p}x - \frac{1}{p} + \frac{r}{2} = -\frac{1}{p}x^2 + \frac{1}{p}x - \frac{1}{p}$$

$$-\frac{1}{p}x^2 + \frac{1}{p}x - \frac{1}{p} = -x^2 + 1x - 1 \rightarrow (-x+1)(x-1) = \boxed{\begin{array}{l} \rightarrow x-1 \\ \rightarrow x-1 \end{array}}$$

⑤



$$f(x) = -(x+1)(x-5) = -x^2 + 4x + 5$$

$$-(x-1)^2 - \varepsilon = -(x-1)^2 + \varepsilon \xrightarrow{x \text{ int}} -(\frac{r}{2}x + 1)^2 + \varepsilon = -(\frac{r}{2}x + 1)^2 + \varepsilon \xrightarrow{x-r} \frac{r(\frac{r}{2}x + 1)^2 - 1}{r} \xrightarrow{+1} \frac{r(\frac{r}{2}x + 1)^2 - 1}{r} \rightarrow 1 \wedge (x + \frac{1}{r})^2 - 1$$

$$A(\alpha, \beta) = \left(-\frac{1}{r}, -1 \right) \rightarrow \alpha\beta = -\frac{1}{r}x - 1 = \boxed{\frac{1}{r}}$$

⑥

$$D_f = (a, \varepsilon)$$

$$D_g = [-1, b)$$

$$y = f(x-1) + g(x+1)$$

$$\begin{array}{l} a < x-1 < \varepsilon \\ a+1 < x < \varepsilon+1 \end{array} \quad \begin{array}{l} -1 < x+1 < b \\ -2 < x < b-1 \end{array} \quad \left\{ \begin{array}{l} b-1 = \varepsilon+1 \rightarrow b = \varepsilon+2 \\ a+1 = -2 \rightarrow a = -3 \\ a-b = -3 - (\varepsilon+2) = -\varepsilon-5 \end{array} \right.$$

⑦

$$y_1 = f\left(\frac{x}{2} + 1\right)$$

$$x = -2 \rightarrow -\frac{r}{2} + 1 = -1 \rightarrow -\frac{r}{2} = -2 \rightarrow r = 4$$

$$x = \varepsilon \rightarrow \frac{\varepsilon}{2} + 1 = \nu \rightarrow \varepsilon = 2(\nu - 1)$$

$$r f(x) - r \rightarrow r [-1 \ 1] - r = [-\varepsilon \ 1]$$

$$\sqrt{[-\varepsilon \ 1]} = [0 \ \varepsilon]$$

$$\sqrt{[-\varepsilon \ 1]} \Rightarrow R_{f, \varepsilon} [-\varepsilon \ 1] \quad D_f = [-\varepsilon \ \nu]$$

* چون در عبارت زیر رادیکال می آید پس عبارت زیر رادیکال باید مثبت باشد
 هم باید درست است و بر مسم از 0 شروع می شود

⑧

$$f(x) = \left| \frac{x+1}{x-1} \right| \xrightarrow{x-1} \left| \frac{(x-1)+1}{x(x-1)+1} \right| = \left| \frac{x}{x^2-x+1} \right| \xrightarrow{\text{abstr}} \left| \frac{x-1}{x^2-x} \right| + 1 = g(x)$$

$$x + g(x) = 0 \xrightarrow{\text{abstr}} x + 1 + \left| \frac{x-1}{x^2-x} \right| < 0 \rightarrow x + 1 + \frac{x-1}{x^2-x}$$

$$\frac{x^2 - x + x - 1 + x - 1}{x^2 - x} = \frac{x^2 - 1}{x^2 - x} = \frac{(x-1)(x+1)}{x(x-1)} = \frac{x+1}{x}$$

$$\frac{x+1}{x} < 0 \rightarrow x < -1$$