

$$f(x) \Rightarrow S \left| \frac{1}{a} \right| \frac{1}{r} \Rightarrow g(x) = f\left(x - \frac{1}{r}\right) + \frac{1}{ra} = -\frac{1}{r}x + \frac{1}{r}x - \frac{1}{r} - 1$$

$$- \frac{1}{r}x^2 + \frac{1}{r}x - \frac{1}{r} = 0 \rightarrow x^2 - x + 1 = 0 \quad \begin{cases} x=1 \\ x=-1 \end{cases}$$

$$f(x) \xrightarrow{r \rightarrow -1} 1 - r f(rx + 1)$$

$$\left| \frac{1}{r} \right| \xrightarrow{+1 \rightarrow x-r \rightarrow y} \left| \frac{1}{r} \right| = a \rightarrow aB = \frac{1}{r}x - 1 = -\frac{1}{r}$$

-2

$$y = r - \sqrt{rx} \xrightarrow{y \rightarrow r} y = r - \sqrt{r(x+1)} \xrightarrow{y \rightarrow r} y = \sqrt{r(x+1)} - r$$

-3

$$\xrightarrow{y \rightarrow r} y = \sqrt{r(x+1)} + r \xrightarrow{y \rightarrow r} y = f(x) \rightarrow \sqrt{r(x+1)} + r = \frac{1}{r}$$

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

$$D_g = [-1, b) \xrightarrow{g(x+1)} D_g = [-r, b) \quad D_f = (a, r] \xrightarrow{f(x-1)} D_f = (a, a]$$

$$\Rightarrow D_f \cap D_g = (-r, a) \Rightarrow b = a, a = -r \Rightarrow a - b = -r - a = -1$$

-4

$$f\left(\frac{x}{r} + 1\right) \xrightarrow{f(x)} f(x) \xrightarrow{f(x)} \sqrt{rf(x) - r}$$

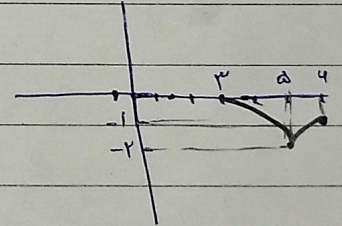
$-\frac{1}{r}$	$-\frac{1}{r}$	$-\frac{1}{r}$	0	1	2	3	4	5	6	7	8	9	10
0	1	0	-1	0	1	0	-1	0	1	0	-1	0	1

-5

$$\Rightarrow D_{g_r} = \left[-\frac{1}{r}, \frac{1}{r}\right]$$

$$f(x+r) \xrightarrow{f(x)} f(x) \xrightarrow{f(x)} f(x-1) - 1$$

$-\frac{1}{r}$	$-\frac{1}{r}$	1	2	3	4	5	6	7	8	9	10
0	1	0	-1	0	1	0	-1	0	1	0	-1



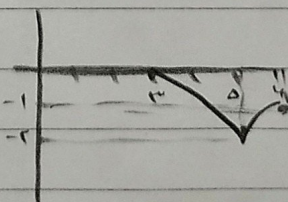
-4

$$f(x) = \log_r x \xrightarrow{f(x)} \log_r x \xrightarrow{f(x)} -\log_r x \xrightarrow{f(x)} r - \log_r x \xrightarrow{f(x)} r - \log_r x = g(x)$$

$$g(-1) = r - \log_r 1 = -1, g(4) = r - \log_r 4 = -1 \Rightarrow -1 - r = -1$$

$$f(-x+r) \xrightarrow{f(x)} f(x) \xrightarrow{f(x)} f(x-1) - 1$$

$-\frac{1}{r}$	$-\frac{1}{r}$	1	2	3	4	5	6	7	8	9	10
0	1	0	-1	0	1	0	-1	0	1	0	-1

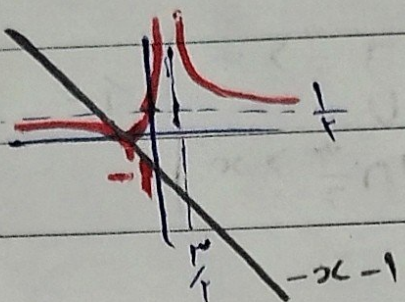


-1

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$$g(x) = \left| \frac{(x-r)+1}{r(x-r)+1} \right| + 1, \quad g(x) + x < 0 \Rightarrow \left| \frac{x-1}{rx-r} \right| + 1 + x < 0 \quad -9$$

$$\left| \frac{x-1}{rx-r} \right| < -1-x \Rightarrow x < -1$$


$$f(x) = (x-r)^r + rv, \quad g(x) = \sqrt{\frac{f(x)(rn-f(x))}{r}} \Rightarrow \begin{cases} f(x) = 0 \rightarrow x = 0 \\ rn - (x-r)^r - rv = 0 \\ f(x) = 1 \rightarrow x = r \end{cases} \quad -10$$

$$\frac{0}{-1+1} \xrightarrow{\frac{d(x), dv}{dx + dv}} Dg = [0, r]$$