

تاریخ: _____

$$\textcircled{1} Df(n) = [-4 \quad 2] \quad Pf(3n-2)$$

$$-4 \leq 3n-2 \leq 2 \rightarrow -2 \leq 3n \leq 4 \rightarrow \boxed{-\frac{2}{3} \leq n \leq \frac{4}{3}}$$

$$\rightarrow Df(3n-2) = [-4 \quad -2] \quad Df(n)?$$

$$-4 \leq x \leq -2 \rightarrow -12 \leq 3n \leq -6 \rightarrow \boxed{-14 \leq 3n-2 \leq -8}$$

$$Df(n) = [-14 \quad -8]$$

$$\textcircled{2} f(n) = n + \sqrt{n-2} \rightarrow g = (x-2) + \sqrt{(n-2)-2}$$

* تابع صعودی است پس داریم بیشترین مقدار را با جایگزینی $f(n)=n$ می‌توانیم پیدا کنیم.

$$f(n) = n-2 + \sqrt{n-2} \xrightarrow{f(n)=n} x = x-2 + \sqrt{x-2}$$

با جایگزینی $x=8$

$$\rightarrow x=8 \rightarrow \boxed{y=8}$$

$$\textcircled{3} g(n) = 2f(3n+1) \rightarrow Rf = [0 \quad 2]$$

$$0 \leq x \leq 2 \rightarrow 0 \leq 3n \leq 12 \rightarrow 1 \leq 3n+1 \leq 13 \rightarrow Pf = [1 \quad 13]$$

$$S = \frac{(13-1) \times 2}{2} = 12$$

$$\textcircled{4} \frac{x'-a}{p} = 2 \rightarrow x' = t+a \quad \left. \begin{array}{l} \\ y = 2x-1 \end{array} \right\}$$

$$y' = a + 2(-2) \rightarrow y' = a-4$$

$$(a-4) = 2(t+a) - 1 \rightarrow a-4 = 2t+2a-1 \rightarrow \boxed{a=-4}$$

Subject: ()

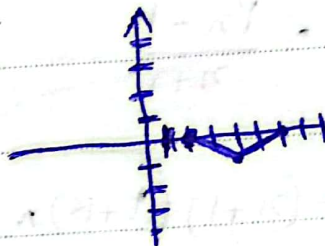
② $h(x) = -f(x-r)$

$0 \leq x \leq r \rightarrow -r \leq x-r \leq 0 \xrightarrow{f(x-r)} -r \leq (r-x) \leq r$

$\rightarrow -r \leq -x \leq -r \rightarrow \boxed{r \geq x \geq r}$

$\xrightarrow{\max} -f(x-r) = r \rightarrow f(x-r) = -r \xrightarrow{\min} f(x) = -r$

$\xrightarrow{\min} \boxed{f(x) = -1}$



③ $y = \sqrt{-(x+r)f(r-x-1)}$

	$-r$	$x=0$	$x=1$	$r-x-1=0$	$x=r$
$f(r-x-1)$	$-r$	0	$+$	0	$+$
$-(x+r)$	$+$	0	$-$	$-$	$-$
y	$-$	0	$+$	0	$+$

$\rightarrow D_y = [-r, 0] \cup [1, r]$

④ $f(x) = |rx - r| + 1 \rightarrow f(x) = |r(x+k) - r| + 1$

$\rightarrow f(x) = |r(x+k) - r| - r$

$|rx + rk - r| - r = 0$

$f(x) = |rx - r| + 1 \xrightarrow{x=0} \boxed{y = r}$

$\xrightarrow{x=0, y=r} |rk - r| - r = r \rightarrow |rk - r| = r \rightarrow rk = 2r \quad k = 2/r$

$\rightarrow rk = -r \quad k = -1/r$

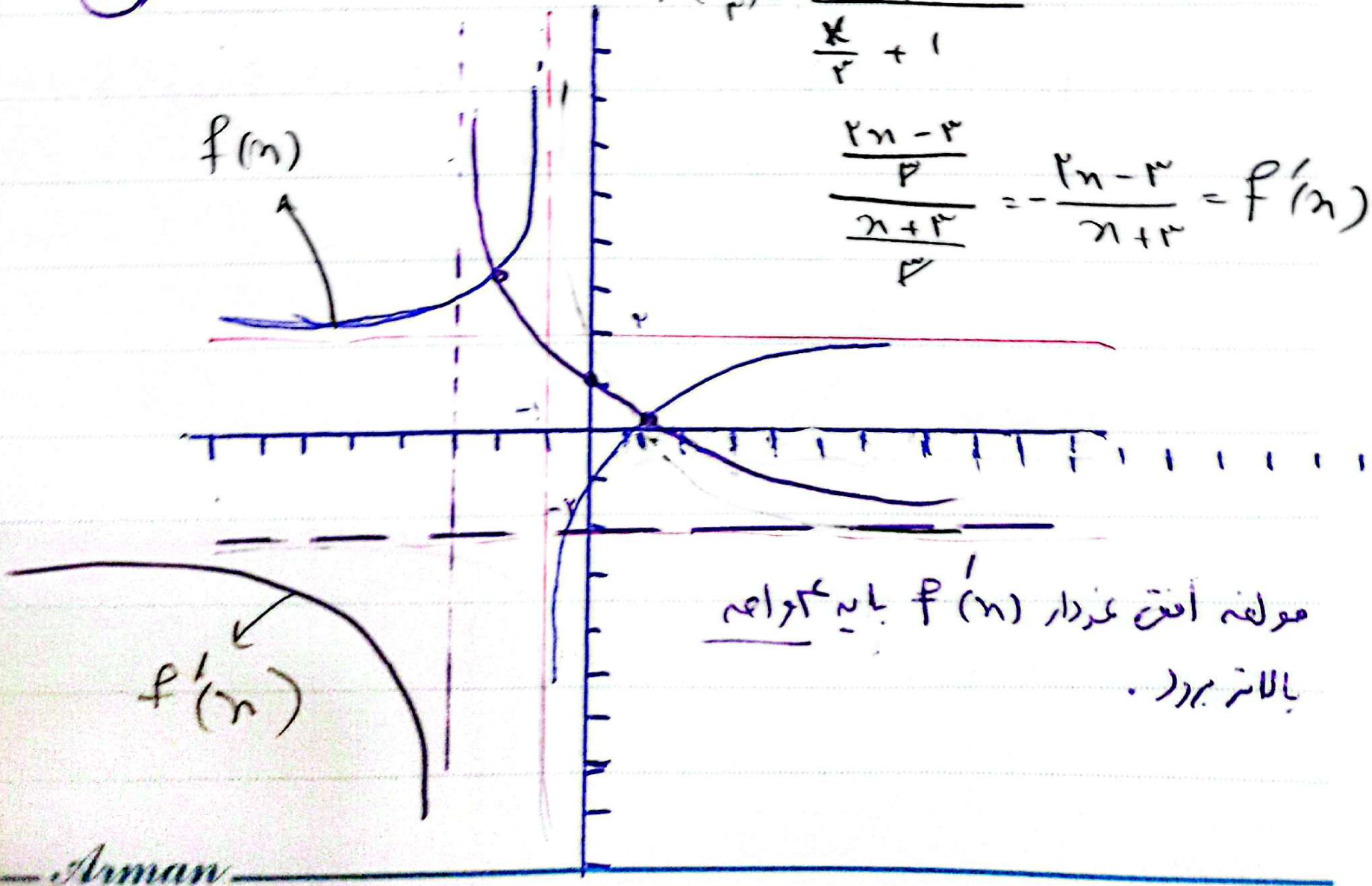
$\rightarrow k > 0 \rightarrow k = 2/r$

— Arman —

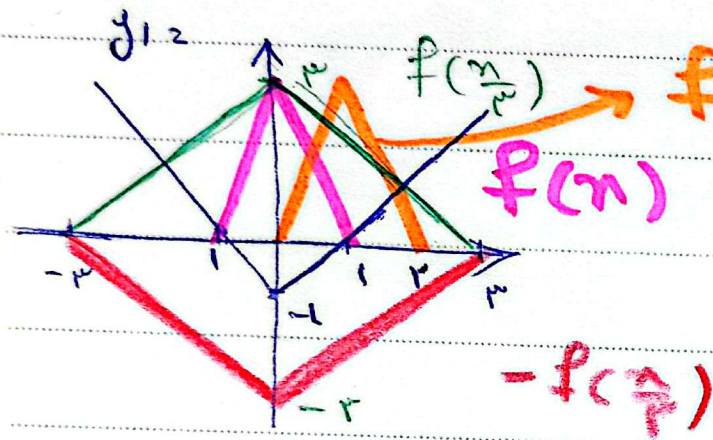
①

$$f\left(\frac{x}{r}\right) = \frac{\ln\left(\frac{x}{r}\right) - 1}{\frac{x}{r} + 1}$$

$$\frac{\frac{rx - r}{r}}{\frac{x+r}{r}} = -\frac{rx - r}{x+r} = f'(x)$$



Arman



$$f\left(\frac{x}{r}\right) \rightarrow f(n-1) = \cancel{f(n)} - f$$

$$y = rx \quad 0 \leq x \leq r$$

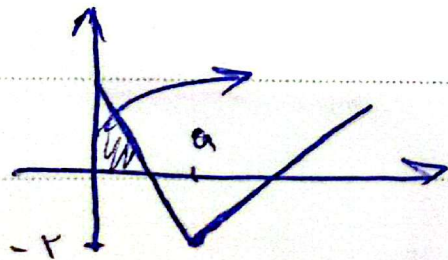
$$y = -rx + 2r \quad r \leq x \leq 2r$$

$$rx = r \quad x = \frac{r}{r}$$

$$-rx + 2r = r \quad x = \frac{r}{r}$$

$$\text{Area} = \frac{r}{r} \times \frac{1}{2} \times \frac{1}{r} = \frac{1}{r}$$

$$f(x) = |x - a| - r$$



$$\frac{(a-r)^r}{r} + \frac{r \times r}{r} = \frac{9}{r}$$

$$\frac{(a-r)^r}{r} = \frac{1}{r} \quad a = r \quad \text{or} \quad a = -1$$

$$f(x) = |x - r| - r$$

$$f\left(\frac{1}{r}\right) = \left|\frac{1}{r} - r\right| - r = \left|-\frac{1}{r}\right| - r = \frac{1}{r} - r = \frac{1}{r} - \frac{r}{r} = \frac{1-r^2}{r}$$

Arman