

مسابقاتی / تکلیف شماره ۶

الف) $f(x) \rightarrow Df = [-4, 2]$ $f(3x-2)$ (۱)

$$-4 \leq 3x-2 \leq 2 \xrightarrow{+2} -2 \leq 3x \leq 4 \xrightarrow{\div 3} -\frac{2}{3} \leq x \leq \frac{4}{3}$$

$$D_{f(3x-2)} = \left[-\frac{2}{3}, \frac{4}{3}\right]$$

ب) $f(3x-2) \rightarrow Df = [-4, 2]$ $f(x)$

$$-4 \leq x \leq -2 \xrightarrow{\times 3} -12 \leq 3x \leq -6 \xrightarrow{+2} -14 \leq 3x-2 \leq -8$$

$$D_{f(x)} = [-14, -8]$$

$f(x) = x + \sqrt{x-2}$ (۲)

دو دایره راست $\rightarrow (x-2) + \sqrt{(x-2)-2} = x-2 + \sqrt{x-4}$

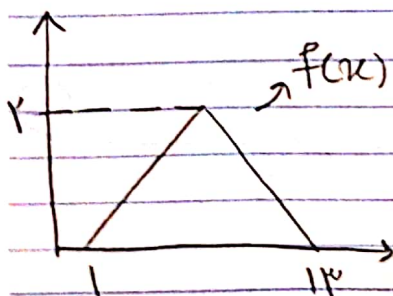
قرینه نسبت به خط $y=x$ $\rightarrow y-2 + \sqrt{y-4} = x \xrightarrow{y=x} \sqrt{y-4} - 2 = 0 \rightarrow \sqrt{y-4} = 2$
(یعنی معکوس کنیم)

$$y-4 = 4 \rightarrow y = 8$$

انتخاب تابع می کنیم $g(x) = 2f(3x+1)$ (۳)

باقی مسئله $\rightarrow 0 \leq x \leq 4 \xrightarrow{\times 3} 0 \leq 3x \leq 12 \xrightarrow{+1} 1 \leq 3x+1 \leq 13$

$$D_{f(x)} = [1, 13]$$



$$S = \frac{12 \times 2}{2} = 12$$

$$y = f(x) \rightarrow A(1, -3)$$

$$y = a + \lambda f\left(\frac{x-a}{\lambda}\right) \rightarrow A'$$

(۴)

$$y = \lambda x - \lambda \rightarrow A'$$

$$\frac{x-a}{\lambda} = 1 \rightarrow x-a = \lambda \rightarrow x = \lambda + a$$

$$-3 = y_A \xrightarrow{\lambda} -3 = \lambda y_A + a \rightarrow -3 + a = \lambda y_A + a = y$$

$$A' \begin{cases} \lambda + a \\ -3 + a \end{cases}$$

$$y = \lambda x - \lambda$$

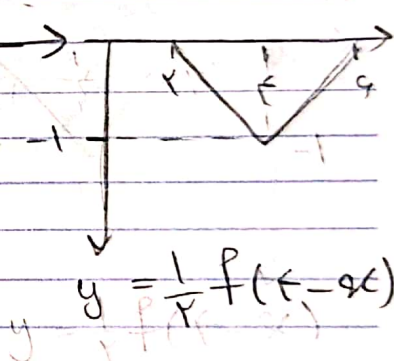
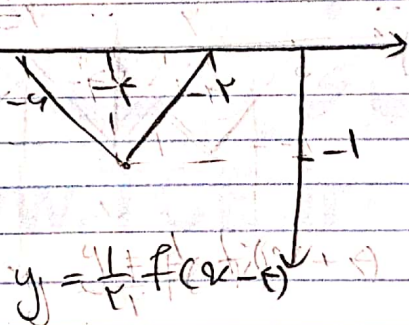
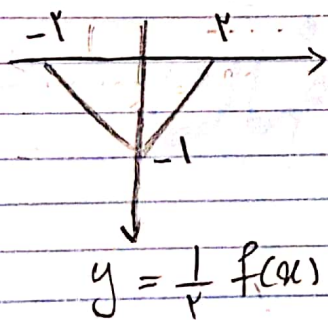
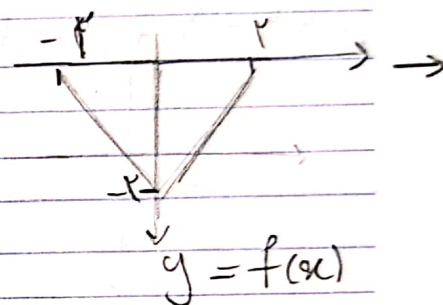
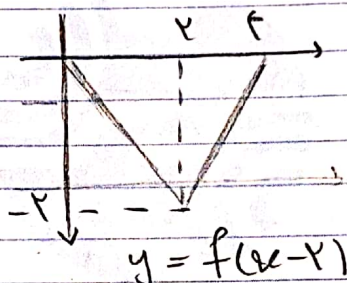
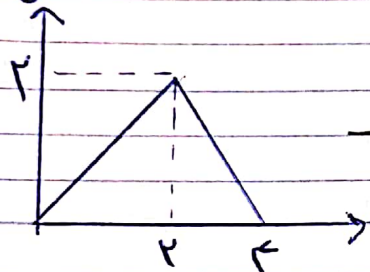
$$\lambda + \lambda a$$

$$[A'] \rightarrow -3 + a = \lambda(\lambda + a) - \lambda \rightarrow a = -3$$

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

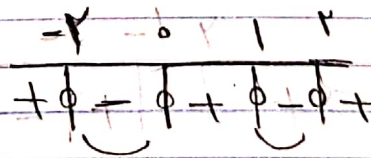
$$y = \frac{1}{\lambda} f(\lambda - x)$$

(۵)



$$y = \sqrt{-(x+1)f(3x-1)} \rightarrow -(x+1)f(3x-1) \geq 0 \rightarrow$$

$$(x+1)f(3x-1) \leq 0$$



$$3x-1 = -1 \rightarrow x = 0$$

$$3x-1 = 2 \rightarrow x = 1$$

$$3x-1 = \infty \rightarrow x = 2$$

$$D_f = [-1, 0] \cup [1, 2]$$

(۶)

قضا را چیزی جز دعا بر نمی گرداند. پیامبر اکرم (ص)

$$f(x) = |2x - 3| + 1$$

(V)

نسبت به k واحد $\rightarrow |2(x+k) - 3| + 1 = |2x + 2k - 3| + 1$

نسبت به 3 واحد $\rightarrow |2x + 2k - 3| + 1 - 3 \rightarrow g(x) = |2x + 2k - 3| - 2$

$$f(x) = |2x - 3| + 1 \xrightarrow{x=0} y = 4$$

$$g(x) \xrightarrow{f} f = |2k - 3| - 2 \rightarrow |2k - 3| = 6$$

$$2k - 3 = 6 \rightarrow 2k = 9 \rightarrow k = \frac{9}{2} = 4.5 \rightarrow k > 0$$

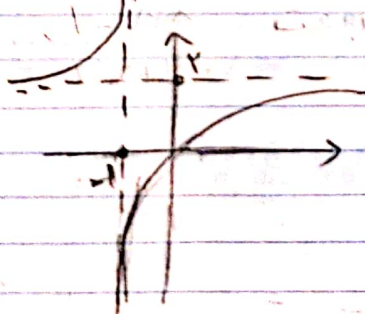
$$-2k + 3 = 6 \rightarrow 2k = -3 \rightarrow k = -1.5 \times$$

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

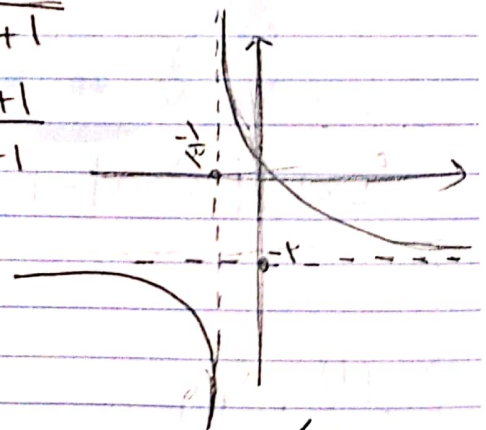
(A)

نسبت به 3 واحد $\rightarrow -\frac{2x - 1}{x + 1}$ طول نقاط $\rightarrow \frac{-2x + 1}{3x + 1}$

$$y = \frac{2x - 1}{x + 1}$$



$$y = \frac{-2x + 1}{3x + 1}$$



برای اینکه یک نقطه‌ای برخورد داشته باشد باید $y = \frac{-2x + 1}{3x + 1}$

از واحد به سمت بالا ببریم

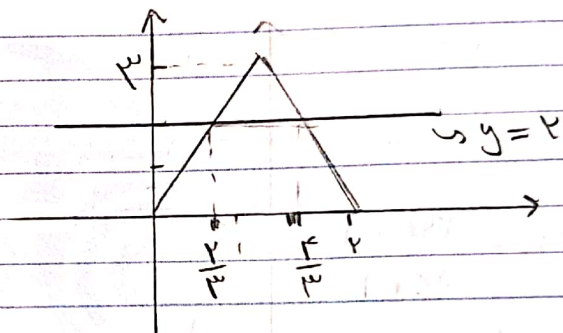
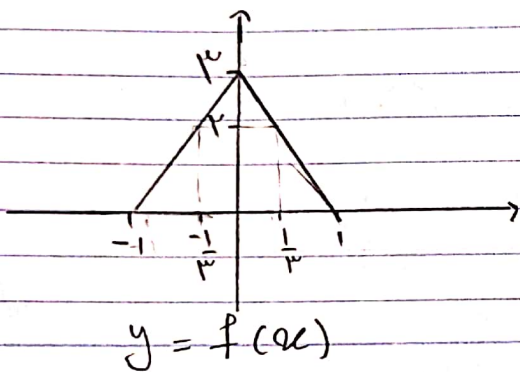
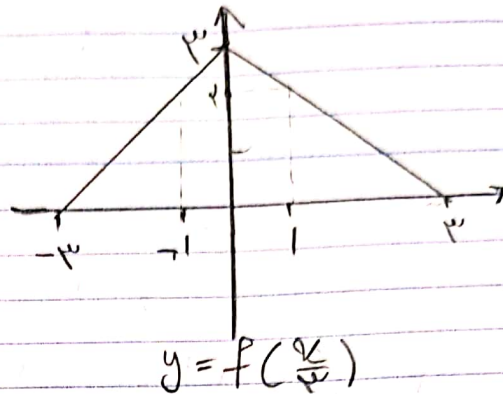
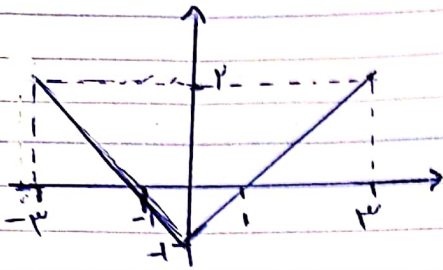
جمعه

۹ محرم ۱۴۳۷ 23 OCT 2015

$$y_1 = -f\left(\frac{x}{\mu}\right) + r$$

$$y_r = f(x-1)$$

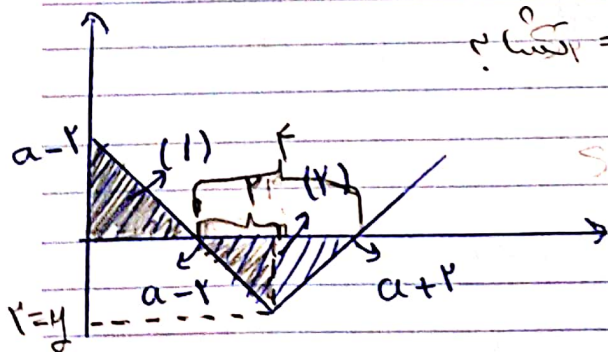
(9)



$$S = \left(\frac{f}{\mu} - \frac{r}{\mu}\right) \times 1 = \frac{1}{\mu}$$

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

(10)



$$r_{\text{lower}} = \frac{a-r}{r} = \frac{a-r}{y} \rightarrow y=r$$

$$S_r = \frac{r \times r}{r} = r$$

$$\frac{a}{r} - r = \frac{1}{r}$$

$$S_1 = \frac{1}{r} \rightarrow \frac{(a-r)^r}{r} = \frac{1}{r} \rightarrow (a-r)^r = 1$$

$$\rightarrow |a-r|=1 \rightarrow a-r=1 \rightarrow a=r \rightarrow \checkmark$$

$$\rightarrow r-a=1 \rightarrow a=1 \times$$

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