

الف) $(9, 2x+3y)$ و $(3x-y, -4)$ (الف)

$$\begin{cases} 3x - y = 9 \\ 3x - 2y = 18 \end{cases} \Rightarrow \begin{cases} 7x = 18 \Rightarrow x = 2 \\ x + 2y = -9 \end{cases} \Rightarrow y = -3$$

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

ب) $(-1, 0)$ و $(\frac{1}{x}, -\frac{1}{y}, \frac{2}{x}, -\frac{y}{y})$

$$\begin{cases} \frac{1}{x} - \frac{1}{y} = -1 \\ \frac{2}{x} - \frac{y}{y} = -1 \end{cases} \Rightarrow \begin{cases} y - x = -xy \\ 2y - 0x = -xy \end{cases} \Rightarrow \begin{cases} -yx = 12xy \\ -yx = -1 \end{cases} \Rightarrow \begin{cases} x = -1 \\ y = -1 \end{cases}$$

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

f = { (a, 2a) و (1, a+1) و (1, 0) و (2, 0) }
(x, x-2)

f(a)+2f(2) = 25f(1)
 $\Rightarrow -9+2b = -9 \Rightarrow b=0$

a+1 = -2 \Rightarrow a = -3

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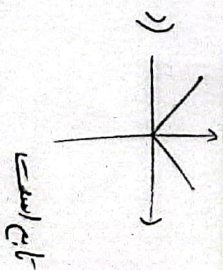
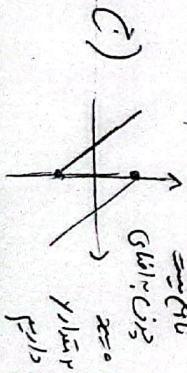
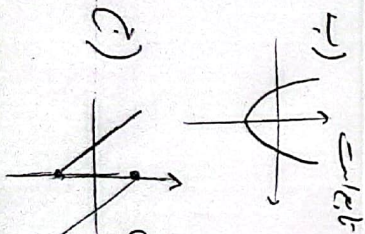
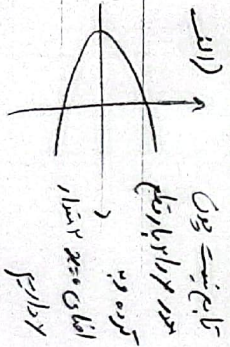
f = { (-1, m^2-2m) و (3, 2m) و (-1, -2) و (m+1, 2) و (2, 5) و (m^2+2, 2m+1) }

$m^2 - 2m = -2 \Rightarrow (m-2)(m-1) = 0$

$m=2 \rightarrow (2, 5)$
 $m=1 \rightarrow (1, 2)$

همچنین مختار m
 $m+1=2 \rightarrow (2, 2)$
 $m+1=3 \rightarrow (3, 2)$

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الف) $y = -\sqrt{x+1}$
x > -1

تابع سهمی
- دامنه 1- > x
- بازه 2- y < 0

ب) $x = \frac{y}{\sqrt{1-y^2}}$
همواره 1 > y
منفی

- دامنه هر دو 1 > y
- بازه برای هر دو در بازه تابع است

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الف) $|y| = x$
 $x = 1 \Rightarrow y = \pm 1$
 تابع زوج

$\Rightarrow y^r + r y^{r-1} + r y + x^r + x = 0$
 $y(y^{r+r-1} + r y^{r-1} + r y + x^r + x) = -x(x^r + x)$
 دقت منی

مجموعه جوابها $x = 1$ و $x = -1$ است
 پس جوابها $y = 1$ و $y = -1$ است

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$f(x) = \frac{x^r + r x + 0}{x^r + r x + r} = \frac{(x+r)^r + 1}{(x+r)^r + r}$
 $f(\sqrt{r}-r) = \frac{r+1}{r+r} = \frac{r}{r}$

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$f(x) = x^r + ax + b \Rightarrow f(x) = x^r + x - r$
 $y = rx - a \Rightarrow y = rx - 1$
 $-r = -r - a \Rightarrow a = 1$
 $-r = -1 - 1 + b \Rightarrow b = -r$

$x^r + x - r = rx - 1 \Rightarrow x^r - rx - 1 = 0 = (x+1)(x^r - x - 1)$

$$\begin{array}{r|l} x^r - rx - 1 & x+1 \\ -x^r - x^r & x^r - x - 1 \\ \hline -2x^r - rx - 1 & \\ +2x^r + 2x & \\ \hline -x - 1 & \\ -x - 1 & \\ \hline 0 & \end{array}$$

 $\alpha + \beta = \frac{-(-1)}{1} = 1$

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$f = f(r(a+b), (1, ra), (-1, a - rb + 1))$
 $a + b = ra \Rightarrow a = b$
 $a - ra + 1 = ra \Rightarrow a = \frac{1}{r}$

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$f(x) = \frac{rx^r - ax + c + 1}{bx + r}$

$f(1) = 1 = \frac{r - a + c + 1}{b + r} \Rightarrow b + r = r - a + c + 1 \Rightarrow -a + c - b = -r$
 $f(-1) = -1 = \frac{r + a + c + 1}{-b + r} \Rightarrow b - r = a + c + 1 \Rightarrow a + c - b = -1$
 $f(r) = r = \frac{r^2 + r + 1 + c}{rb + r} \Rightarrow r^2 + r = r^2 + c \Rightarrow \frac{c - b - r^2}{-r} = -1r \Rightarrow -rb = -1r \Rightarrow b = r \Rightarrow c = -1$

$\left. \begin{array}{l} r - rb = -1 \\ \Rightarrow c - b = -1 \Rightarrow d = r \\ a + b + c = 0 \end{array} \right\}$

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