

الف) $\begin{cases} 2x - y = 9 \\ x + 2y = -2 \end{cases} \Rightarrow \begin{cases} 2x + y = 8 \\ 2x - y = 9 \end{cases} \Rightarrow \begin{cases} 2x = 17 \\ x = 8.5 \end{cases}$ $y = -2 - x = -10.5$ $\frac{x}{y} = \frac{-2}{3}$

ب) $\frac{1}{x} - \frac{1}{y} = -1 \Rightarrow y - x = -xy$ $\frac{d}{x} - \frac{v}{y} = -3 \Rightarrow dy - vx = -3xy$

$\begin{cases} 4y - 4x = -2xy \\ 2y - 2x = -xy \end{cases} \Rightarrow \begin{cases} 2y - 2x = -xy \\ y - x = -xy \end{cases}$

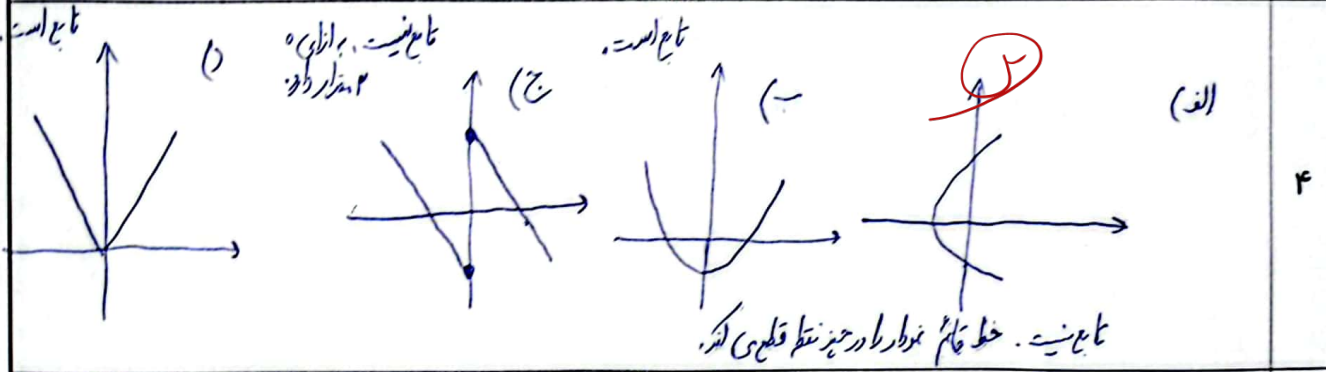
$y = 2x$
 $x = \frac{-1}{2}$
 $y = -1$ $\frac{x}{y} = \frac{1}{2}$

$f(a) + 2f(x) = 2f(1)$
 $2a + 2b = 2 \times (-1) = -2$
 $-4 + 2b = -2$
 $2b = 2$ $b = 1$

$a + 1 = -2$
 $a = -3$

$f = \{(-1, m^2 - 3m), (2, 8), (-1, 4), (m+1, 2), (2, 4), (m^2 + 2, 2m + 1)\}$

$m^2 - 3m = 2$
 $m^2 - 3m + 2 = 0$
 $(m-2)(m-1) = 0$
 $m = 2$ $m = 1$
 \times \times \Rightarrow بازای هیچ مقدار m رفتار نیست.



الف) $y = -\sqrt{x+1}$ تابع است.
 رسم نمودار

ب) $x = \frac{y}{\sqrt{1-y^2}}$
 $y^2 = 1 - y^2$ $2y^2 = 1$ $y^2 = \frac{1}{2}$ $y = \pm \frac{\sqrt{2}}{2}$

صلحتت با درصفحه آفد

الف) $|y| = x \Rightarrow x = \pm 1$ 5

$y^3 + 3y^2 + 3y + x = 0$ 6

$(x, y_1) \Rightarrow y_1 = y_2$
 $y_1^3 + 3y_1^2 + 3y_1 = -x^3 - x$
 $y_2^3 + 3y_2^2 + 3y_2 = -x^3 - x$
 $\Rightarrow y_1^3 + 3y_1^2 + 3y_1 = y_2^3 + 3y_2^2 + 3y_2$
 $(y_1+1)^3 - 1 = (y_2+1)^3 - 1$
 $(y_1+1)^3 = (y_2+1)^3 \Rightarrow y_1+1 = y_2+1$
 $y_1 = y_2$

$f(x) = \frac{x^2 + 4x + 4}{x^2 + 2x + 1}$

$f(\sqrt{3}-1) = \frac{(\sqrt{3}-1)^2 + 4(\sqrt{3}-1) + 4}{(\sqrt{3}-1)^2 + 2(\sqrt{3}-1) + 1} = \frac{3 - 2\sqrt{3} + 1 + 4\sqrt{3} - 4 + 4}{3 - 2\sqrt{3} + 1 + 2\sqrt{3} - 2 + 1} = \frac{4 + 2\sqrt{3}}{2} = 2 + \sqrt{3}$ 7

$f(x) = x^3 + ax + b$

$y = 3x + a = 0$

$y = 3x - a$

$(-1, -1) \Rightarrow -1 - a + b = -1 \quad b = -1 + 1 = 0$
 $-1 - a = -1 \Rightarrow a = 0$ 5

$x^3 + x - 1 = 3x - 1$

$x^3 - 2x - 1 = 0 \quad (x+1)(x^2 - x - 1) = 0$
 $x = \frac{1 \pm \sqrt{1+4}}{2} = \frac{1 \pm \sqrt{5}}{2}$ 8

$$\begin{array}{r} x^3 - 2x - 1 \mid x+1 \\ -x^3 + x + 1 \\ \hline -2x - 1 \\ x+1 \\ \hline -x-1 \\ x+1 \\ \hline 0 \end{array}$$

$f = \{(1, a+b), (1, 3a), (-1, a-2b+1)\}$
 $a+b = 3a \Rightarrow a = \frac{1}{2}$
 $a+b = a-2b+1 \Rightarrow 2b = 1 \Rightarrow b = \frac{1}{2}$ 9

$f(x) = \frac{bx^2 - ax + c + 1}{bx + 3}$ 5

$x = \frac{bx^2 - ax + c + 1}{bx + 3} \Rightarrow bx^2 - ax + c + 1 = bnx^2 + 3ax$
 $b = 3$
 $a = -3$
 $c + 1 = 0 \Rightarrow a + b + c = -3 + 3 - 1 = -1$
 $c = -1$ 10

$$x = \frac{y_1}{\sqrt{1-y_1^2}}$$

$$x = \frac{y_2}{\sqrt{1-y_2^2}}$$

تمت بکمال عشق

$$\frac{y_1}{\sqrt{1-y_1^2}} = \frac{y_2}{\sqrt{1-y_2^2}} \rightarrow \frac{y_1^2}{1-y_1^2} = \frac{y_2^2}{1-y_2^2}$$

مفروضه (+)

$$y_1^2 - y_1^2 y_2^2 = y_2^2 - y_1^2 y_2^2$$

$$y_1^2 = y_2^2 \rightarrow |y_1| = |y_2| \rightarrow y_1 = y_2$$

تکلیف است

در $y_2 > y_1$ صورت