

Date:

Subject:

ماتریس

ماتریس، معادلات

الف) $(9, m+2y), (2m-y, -x)$ $\left\{ \begin{array}{l} (9 = 2m - y) \times 2 \\ (-x = m + 2y) \end{array} \right. \left\{ \begin{array}{l} 18 = 4m - 2y \\ -x = m + 2y \end{array} \right.$ (1)

$\frac{m}{y} = \frac{2}{-2} = -\frac{2}{2}$ $\left\{ \begin{array}{l} y = -2 \\ m = 2 \end{array} \right.$ $18 = 4m$

ب) $(-1, -2), (\frac{1}{m} - \frac{1}{y}, \frac{5}{m} - \frac{1}{y})$ $\left\{ \begin{array}{l} (\frac{1}{m} - \frac{1}{y} = -1) \times 2my \\ (\frac{5}{m} - \frac{1}{y} = -2) \times my \end{array} \right.$ (5)

$\Rightarrow \left\{ \begin{array}{l} -2my = 2y - 2m \\ -2my = 5y - 2m \end{array} \right. \Rightarrow \left\{ \begin{array}{l} 2y - 2m = 5y - 2m \\ \frac{2}{5}m = 3y \\ \frac{m}{y} = \frac{15}{2} \end{array} \right.$ (10)

$f(a) = 2a, f(2) = b, f(1) = -2, f(a) + 2f(2) = 3f(1)$ (12)

$\Rightarrow 2a + 2b = -6 \rightarrow a + b = -3$ (*) (15)

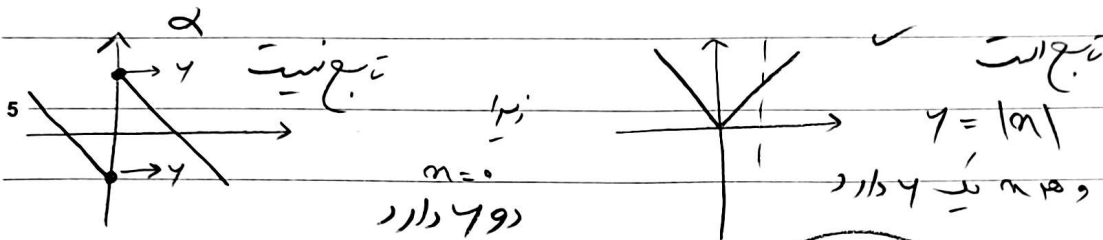
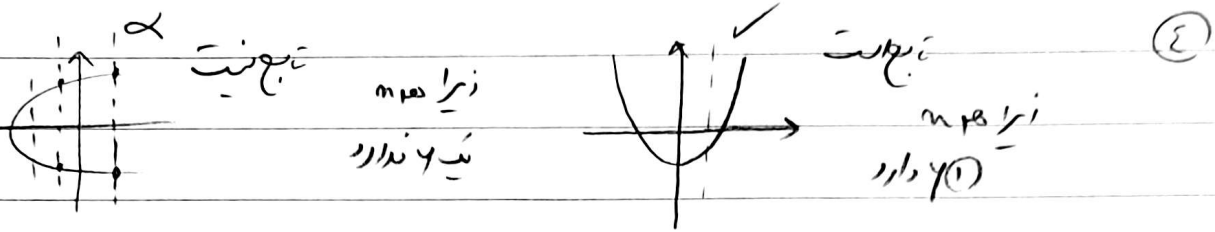
اگر فرض کنیم معادله اول $(1, a+1)$ و معادله دوم $(1, -2)$ باشد و این دو معادله را با هم جمع کنیم برای

$a+1 = -2 \rightarrow a = -3$ $\rightarrow -3 + b = -3$ $\rightarrow b = 0$

$m^2 - 2m = -2 \rightarrow m^2 - 2m + 2 = 0$ $\left\{ \begin{array}{l} m=1 \times \\ m=2 \times \end{array} \right.$ (17)

در این دو جواب اول را بگیریم $(\frac{m+1}{2}, 4)$ $\leftarrow m=1$ \leftarrow $m=2$

این دو جواب را با هم جمع کنیم $(\frac{m+1}{2}, 4)$ \leftarrow $m=2$ \leftarrow $m=1$



11) $y = \sqrt{m+1}$ \rightarrow $m = -1 \rightarrow y = 0$
 $m = 3 \rightarrow y = 2$ \rightarrow $(-\sqrt{8})$ \rightarrow $y = -2$ \rightarrow $(-\sqrt{8})$

10) $m = \frac{y}{\sqrt{1-y^2}}$ $y = \sqrt{1-y^2}$
 $y^2 = 1 - y^2$ \rightarrow $2y^2 = 1$ \rightarrow $y^2 = \frac{1}{2}$ \rightarrow $y = \pm \frac{1}{\sqrt{2}}$

15) $|y| = m$ \rightarrow $m = 1 \Rightarrow y = \pm 1$ \rightarrow $y = \pm 1$

16) $y^3 + 3y^2 + 3y + m^3 + m = 0 \Rightarrow (y+1)^3 = 1 - m^3 - m$
 $(y+1)^3 = 1 - m(m^2 + 1)$
 $m = 1 \Rightarrow (y+1)^3 = 1 - 1(2) \Rightarrow y+1 = -1$
 $m = -1 \Rightarrow (y+1)^3 = 1 + 1(2) \Rightarrow y+1 = \sqrt[3]{3} \Rightarrow y = \sqrt[3]{3} - 1$
 $m = 0 \Rightarrow (y+1)^3 = 1 \Rightarrow y+1 = 1 \Rightarrow y = 0$

①

$$f(m) = \frac{m^r + \xi m + \nu - r}{m^r + \xi m + \nu} \quad (V)$$

$$1 + \frac{-r}{m^r + \xi m + \nu} = f(m) \xrightarrow{m = \sqrt{r-r}} 1 + \frac{-r}{(\sqrt{r-r})^r + \xi(\sqrt{r-r}) + \nu}$$

$$\Rightarrow 1 + \frac{-r}{r + \xi - \xi + r + \xi + \xi - 1 + \nu} = 1 - \frac{r}{r} = 1 - \frac{1}{r} = \frac{r-1}{r}$$

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$$r + r m + a(-1 - \xi) - \xi + r + m = \dots \rightarrow a = 1 \quad (A)$$

$$f(m) = m^r + m + b(-1 - \xi) \rightarrow -1 - 1 + b = -2 \rightarrow b = -r$$

$$r m - 1 = a^r + m - r \rightarrow m^r - r m - 1 = 0 \xrightarrow{\text{Substituting } m = -1} (-1)^r - r(-1) - 1 = 0$$

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$$\textcircled{1} = \frac{r}{r} \leftarrow \frac{1 + \sqrt{1 + \xi}}{1 - \sqrt{1 + \xi}} > \frac{1 + \sqrt{1 + \xi}}{r}$$

$$a + b = r a \rightarrow a = b \quad (9)$$

$$r a = a - r b + 1 \rightarrow r a = -a + 1 \rightarrow r a = 1 \quad a = \frac{1}{r} \quad (15)$$

$$\frac{\xi m^r - a m + c + 1}{b m + r} = m \rightarrow \xi m^r - a m + c + 1 = b m^r + r m + 0 \quad (10)$$

$$\begin{aligned} b &= \xi \\ a &= -r \\ c &= -1 \end{aligned} \quad a + b + c = 0 \quad (20)$$