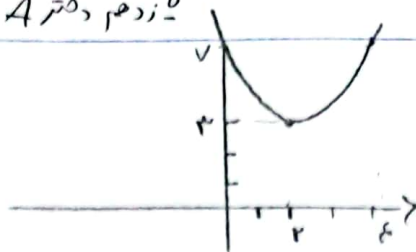


$$الف) y = x^2 - 4x + 7 = (x-2)^2 + 3$$

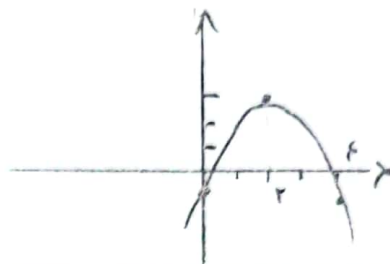
$$S = (2, 3)$$



$$ب) y = -x^2 + 4x - 1 = -(x^2 - 4x + 1) =$$

$$-(x^2 - 4x + 4 - 3) = -(x-2)^2 + 3$$

$$S(2, 3)$$



$$2x^2 + (m+1)x + \frac{1}{2}m + 2 = 0$$

$$الف) \Delta \geq 0 \Rightarrow (m+1)^2 - 4(2)(\frac{1}{2}m + 2) = m^2 + 2m + 1 - 4m - 8 = m^2 - 2m - 7 = 0$$

$$(m-5)(m+3) = 0 \Rightarrow \begin{cases} m=5 \\ m=-3 \end{cases} \quad \text{جواب: } (-\infty, -3] \cup [5, +\infty)$$

$$ب) \Delta = 0, m = 5, -3$$

$$ج) \Delta < 0 \rightarrow \text{جواب: } (-3, 5)$$

$$د) m > 0 \rightarrow (-\infty, -3] \cup [5, +\infty)$$

$$y = (m-2)x^2 - 2(m-1)x + 1 = 0$$

$$الف) \begin{cases} \frac{c}{a} > 0 \rightarrow \frac{1}{m-2} > 0 \rightarrow m-2 > 0 \rightarrow m > 2 \\ -\frac{b}{a} < 0 \rightarrow \frac{2(m-1)}{m-2} < 0 \rightarrow \begin{cases} m=1 \\ m=2 \end{cases} \end{cases}$$

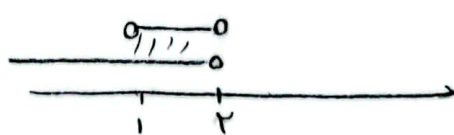


$$1 < m < 2$$

معادله جواب ندارد به ازای هیچ مقدار m را به برقرار نیست

$$ب) x_1 > 0, x_2 < 0 \quad |x_2| > |x_1|$$

$$\frac{c}{a} < 0 \rightarrow m-2 < 0 \rightarrow m < 2$$



$$-\frac{b}{a} < 0 \rightarrow 1 < m < 2$$

$$\text{جواب: } 1 < m < 2$$

$$y = (m-2)x^2 - 2(m+1)x + 1 = 0$$

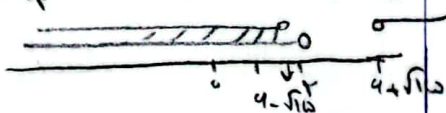
$$الف) \Delta \geq 0 \rightarrow 4(m+1)^2 - 4(m-2)(1) = 4m^2 - 8m + 4 - 4m + 8 = 4m^2 - 12m + 12 = 0$$

$$4m^2 - 12m + 12 = 0 \rightarrow 4(m^2 - 3m + 3) = 0 \rightarrow \Delta = 9 - 12 = -3 < 0 \rightarrow \sqrt{\Delta} = 2\sqrt{15}$$

$$m_1 = \frac{3 + 2\sqrt{15}}{4}, m_2 = \frac{3 - 2\sqrt{15}}{4} \quad m < \frac{3 - 2\sqrt{15}}{4}, m > \frac{3 + 2\sqrt{15}}{4}$$

$$ب) \frac{c}{a} < 0 \rightarrow \frac{1}{m-2} < 0 \rightarrow m-2 < 0 \rightarrow m < 2$$

$$\text{جواب: } m < \frac{3 - 2\sqrt{15}}{4}$$



$$b) \quad x_5 = \frac{-b}{ra} = -2 \rightarrow \frac{x(m+1)}{x(m-2)} = -2 \Rightarrow m+1 = -2m + (-2) \Rightarrow$$

$$3m = -2 \rightarrow m = -\frac{2}{3}$$

$$\frac{r}{r} x^r - (r \sin \alpha) x + \frac{r}{r} = 0 \quad \Delta = 0, x > 0$$

$$\Delta = (r \sin \alpha)^2 - 4 \left(\frac{r}{r} \right) \left(\frac{r}{r} \right) = r \sin^2 \alpha - 4 = 0 \rightarrow r \sin^2 \alpha = 4$$

$$\sin^2 \alpha = 1 \rightarrow \sin \alpha = \pm 1 \rightarrow \sin \alpha = 1$$

$$\frac{r}{r} x^r - 2x + \frac{r}{r} = 0 \xrightarrow{x^4} r x^r - 12x + 9 = 0 \rightarrow (rx - 3)^2 = 0 \rightarrow rx = 3 \rightarrow x = \frac{3}{r}$$

$$y = \frac{(rx^r - 2x - 1)(rx^r - 2x - 0)}{1 - x^r} = \frac{(rx+1)(x-0)(rx-0)(x+1)}{-(x-1)(x+1)}$$

$$y = -[(rx+1)(rx-0)]$$

$$r \neq 0, x \neq -1, x \neq 1 \text{ دىر}$$

$$y = -(4x^r - \frac{10x + 2x - 0}{-12x}) = -4x^r + 12x + 0 \quad a = -4 < 0$$

$$x_5 = \frac{-b}{ra} = \frac{-12}{-4} = \frac{12}{4} = 3 \rightarrow y_5 = -4 \left(\frac{12}{4} \right)^r + 12 \left(\frac{12}{4} \right) + 0 = -4 \times \frac{144}{16} + \frac{144 \times 12}{12 \times 12} + \frac{0 \times 144}{144} =$$

$$\frac{-1014 + 144 \times 12 + 0}{144} = \frac{1728}{144} = \frac{12 \times 12}{12 \times 12} = 1 \text{ سىزنىڭ مەقسەتلىك سىزىڭ.}$$

$$mx^r - (m+2)x - 2 = 0$$

$$S = x_1 + x_2 = \frac{m+2}{m}$$

$$P = x_1 \cdot x_2 = \frac{-2}{m}$$

$$\rightarrow rs + v = ap \Rightarrow rs - ap = -v \Rightarrow r \left(\frac{m+2}{m} \right) - a \left(\frac{-2}{m} \right) = -v$$

$$\frac{rm+4}{m} + \frac{2a}{m} = -v \Rightarrow \frac{rm+14}{m} = -v \rightarrow rm+14 = -vm \Rightarrow$$

$$10m = -14 \rightarrow m = \frac{-14}{10} = \frac{-7}{5} \Rightarrow -\frac{7}{5} x^r - \left(\frac{-7}{5} + 2 \right) x - 2 = 0$$

$$\rightarrow -\frac{7}{5} x^r - \frac{3}{5} x - 2 = 0 \rightarrow x_1^r + x_2^r = S^r - 2P = \frac{1}{14} - 2 \left(\frac{0}{14} \right) = \frac{1-0}{14} = \frac{1}{14}$$

$$S = -\frac{-\frac{7}{5}}{-\frac{7}{5}} = -\frac{1}{1} = \frac{1}{1}, P = \frac{-2}{-\frac{7}{5}} = \frac{10}{7} = \frac{0}{1}$$

$$x^r - ax + 2 = 0$$

$$\beta^r = a\beta + 2 \quad (\beta^r)^r = (a\beta + 2)^r = r a \beta^r - r \cdot \beta^r + 2 \rightarrow \beta^a = r a \beta^r - r \cdot \beta^r + 2 \beta$$

$$\alpha + \beta = a \rightarrow \alpha = a - \beta$$

$$\frac{r a \beta^r - r \cdot \beta^r + 2 \beta}{a \beta^r} = \frac{r(a - \beta) + r a \beta^r - r \cdot \beta^r + 2 \beta}{r a \beta - 10} = \frac{r a \beta^r - r \cdot \beta^r + 2 \beta}{r a \beta - 10}$$

$$y = ax^2 + bx + c, y_1 = 2x + 1.$$

$$x_1 = 2 \rightarrow 2(2) + 1 = 1 \rightarrow (2, 1) \xrightarrow{y_1} 1 = a(2)^2 + b(2) + c \rightarrow 4a + 2b + c = 1$$

$$x_2 = -2 \rightarrow 2(-2) + 1 = -3 \rightarrow (-2, -3) \xrightarrow{y_1} -3 = a(-2)^2 + b(-2) + c \rightarrow 4a - 2b + c = -3$$

$$(0, 4) \quad (0, 1) \rightarrow c = 1$$

$$\begin{cases} 4a + 2b = 0 \\ 4a - 2b = -4 \end{cases} \rightarrow \begin{cases} 12a + 4b = 4 \\ 12a - 4b = -4 \end{cases} \xrightarrow{+} 24a = 0 \rightarrow a = 0$$

$$b = -2 \rightarrow y = x^2 - 2x + 1$$

نقطة $x = x_s = -\frac{b}{2a} = 1$

$$y = 2x^2 + (m+1)x + m + 4 \quad (x_s, y_s) \rightarrow x_s = y_s$$

$$x_s = \frac{-b}{2a} = \frac{-(m+1)}{4}$$

$$\frac{-(m+1)}{4} = \frac{2\left(\frac{-(m+1)}{4}\right)^2 + (m+1)\left(\frac{-(m+1)}{4}\right) + m + 4}{1} = \frac{m^2 + 2m + 1}{4} - \frac{m^2 + 2m + 1}{4} + m + 4$$

$$\frac{-(m+1)}{4} = \frac{m^2 + 2m + 1 - m^2 - 2m - 1 + 4m + 16}{4} = \frac{4m + 16}{4} = m + 4$$

$$\frac{-(m+1)}{4} = m + 4 \rightarrow -m - 1 = 4m + 16 \rightarrow -5m - 17 = 0$$

$$-5m - 17 = 0 \rightarrow m = -\frac{17}{5}$$