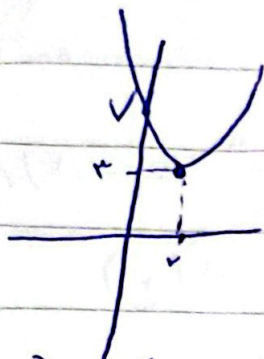


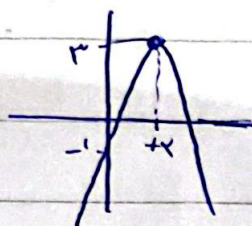
$$\text{ا) } -x^2 - (x+1) \rightarrow s \left| \begin{array}{l} x^2 s - \frac{b}{2a} s + \frac{c}{a} = +r \\ y s - (r)^2 - 1(r) + 1 = r^3 \end{array} \right.$$

عمل طاق

وان ←



$$\text{ب) } -x^2 + (x-1) \rightarrow s \left| \begin{array}{l} x^2 s - \frac{b}{2a} s - \frac{c}{a} = +r \\ -(r)^2 + (r) - 1 = -r + 1 - 1 = +r \end{array} \right.$$



$$rx^2 + (m+1)x + \frac{1}{r}m + r$$

وان ←

$$\text{ا) } \Delta < 0 \rightarrow b^2 - 4ac < 0 \rightarrow (m+1)^2 - 4(r)(\frac{1}{r}m + r) < 0 \rightarrow m^2 + 2m + 1 - (m + 4) < 0$$

$$m^2 - 2m - 3 < 0 \rightarrow (m-3)(m+1) < 0 \rightarrow \frac{-r}{+} \frac{+}{-} \rightarrow m \in (-\infty, -1) \cup (3, +\infty)$$

$$\text{ب) } \Delta = 0 \rightarrow b^2 - 4ac = 0 \rightarrow m^2 + 2m + 1 - (m + 4) = 0 \rightarrow m^2 - 2m - 3 = 0$$

$$\rightarrow m \in \{-1, 3\}$$

$$\text{ج) } \Delta < 0 \rightarrow b^2 - 4ac < 0 \rightarrow m^2 - 2m - 3 < 0 \rightarrow (m-3)(m+1) < 0$$

$$\rightarrow m \in (-1, 3)$$

$$\text{د) } \Delta < 0 \rightarrow (-\infty, -1) \cup (3, +\infty)$$

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

وان ←

$$S < 0 \quad P > 0 \quad \Delta > 0 \quad \text{من } \textcircled{1} \rightarrow \textcircled{2} \quad \text{ا) } \textcircled{1}$$

$$\frac{r(m+1)}{m-1} < 0 \quad \frac{-1}{+} \frac{+r}{+} \quad \frac{1}{m-1} > 0 \quad \frac{r}{-} \frac{+}{+}$$

$$\textcircled{1} \rightarrow (-1, +r) \quad \textcircled{2} \rightarrow (r, +\infty)$$

ب) یکی از ریشه‌های معادله از ریشه‌های مثبت بزرگتر است پس جمع ریشه‌ها باید منفی شود و حاصل ضرب آن‌ها هم منفی باشد

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

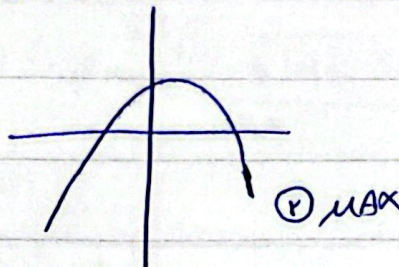
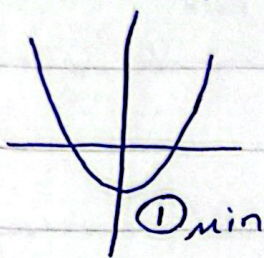
$$S < 0 \quad P < 0 \quad \rightarrow \quad \frac{2m+2}{m-2} < 0 \quad \rightarrow \quad \frac{-1}{1-} \frac{2}{+} \rightarrow (-1, 2) \quad (1)$$

$$\rightarrow \frac{1}{m-2} < 0 \quad \rightarrow \quad - \frac{2}{+} \rightarrow (-\infty, 2) \quad (2)$$

$$\rightarrow (1) \cap (2) \rightarrow (-1, 2)$$

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

سوال ۱ - الف)



برای آخر

$$\text{MAX} \begin{cases} m-2 < 0 \rightarrow m < 2 \\ \Delta > 0 \rightarrow \text{دو ریشه} \\ \frac{c}{a} < 0 \Rightarrow \frac{1}{m-2} < 0 \Rightarrow \frac{2}{-} \frac{1}{+} \rightarrow (-\infty, 2) \end{cases} \Rightarrow (-\infty, 2)$$

$$\text{min} \begin{cases} m-2 > 0 \Rightarrow m > 2 \\ \Delta > 0 \Rightarrow \text{دو ریشه} \\ \frac{c}{a} < 0 \Rightarrow \frac{1}{m-2} < 0 \Rightarrow \frac{2}{-} \frac{1}{+} \rightarrow (-\infty, 2) \end{cases} \Rightarrow \emptyset$$

$$x = -2 \rightarrow \frac{-b}{2a} = \frac{2(m+1)}{2(m-2)} = -2 \rightarrow \frac{m+1}{m-2} = -2$$

$$\rightarrow -2m + 2 = m + 1 \rightarrow -3m = -1 \rightarrow m = \frac{1}{3}$$

$$\frac{1}{2}x^2 - (2\sin\alpha)x + \frac{1}{2} = 0 \xrightarrow{\text{روش در } x} x^2 - (4\sin\alpha)x + 1 = 0$$

$$\rightarrow (x - \sin\alpha)(x - \sin\alpha) \rightarrow \sin\alpha = \pm 1$$

$$\text{(-1)} \rightarrow \frac{1}{2}x^2 + 2x + \frac{1}{2} = 0 \rightarrow x = -1$$

$$\text{(+1)} \rightarrow \frac{1}{2}x^2 - 2x + \frac{1}{2} = 0 \rightarrow x = 1$$

$$y = \frac{(x^2 - x - 1)(x^2 - x - 4)}{1 - x^2} = \frac{1}{(x-1)(x+1)} (x^2 - x - 4) \leftarrow \text{سوال 4}$$

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

$$\rightarrow \text{MAX } f = \frac{-b}{2a} = \frac{-\frac{1}{x}}{-\frac{1}{x}} = \frac{1}{x} \leftarrow \text{سوال 4}$$

$$y_{\text{MAX}} = \frac{1 \cdot 9}{x \cdot 9} = \frac{1}{9}$$

$$\text{MAX } (m+1)x - 2$$

سوال 4

$$f(a+b) = a(a+b) + v \rightarrow v \left(\frac{m+1}{m} \right) = a \left(-\frac{v}{m} \right) + v$$

$$\rightarrow \frac{vm+1}{m} = -\frac{1}{m} + v \rightarrow \frac{vm+1}{m} = \frac{vm-1}{m}$$

$$\rightarrow vm+1 = vm-1 \rightarrow 1 = -1 \rightarrow m = 1$$

$$\rightarrow y = x^2 - 4x - 2 \rightarrow a+b = 1 \rightarrow (a+b)^2 - 2ab = \frac{1}{4} + 1$$

$$\rightarrow \frac{1}{4} = \frac{1}{4}$$

$$x^2 - 2x + 1 = 0$$

سوال 4

$$\frac{a+b}{a+b} \rightarrow \frac{a}{a} + \frac{b}{a} \rightarrow \frac{a}{a} + \frac{b}{a}$$

$$a+b = 1 \rightarrow a+b = 1 \rightarrow b = \frac{1}{a} \rightarrow \frac{a}{a} + \frac{1}{a} \rightarrow \frac{a^2 + 1}{a}$$

$$\rightarrow \frac{a^2}{a} + \frac{1}{a} \rightarrow \frac{(a+b)^2 - 2ab}{(a+b)} \rightarrow \frac{1^2 - 2(1)(1)}{1}$$

$$\rightarrow \frac{1-2}{1} = \frac{-1}{1} = -1$$

$$y = ax^2 + bx + c \rightarrow ax^2 + bx + c$$

سوال 4

$$y_1, y_2 \rightarrow 1 \rightarrow x = -\frac{b}{a} \rightarrow \{a+4a+1 \rightarrow 1+4a+1 \rightarrow a+1\}$$

$$ax^2 + bx + c \rightarrow \frac{x^2}{x^2} \rightarrow \{a+b+c \leq 1\} \rightarrow \{a+b \leq 1\}$$

$$a-a-b+c \leq 1 \rightarrow a-b+c \leq 1 \rightarrow a-b+c \leq 1$$

$$\rightarrow x^2 + bx + c \rightarrow x = -\frac{b}{2a} = \frac{-b}{2a}$$

$$y = 2x^2 + (m+1)x + m + 4$$

روان

مماس بر آن بر $x=0$ یعنی آنقدر در راستای y باشد و دیگر را در نقطه $(0,4)$ باشد

$$2x^2 + (m+1)x + m + 4 = 0 \rightarrow 2x^2 + mx + m + 4 = 0$$

$$\rightarrow \Delta = 0 \rightarrow m^2 - 8m - 48 \rightarrow (m-12)(m+6)$$

$$\xrightarrow{m=12} 2x^2 + 13x + 16 \rightarrow \Delta < 0$$

$$\xrightarrow{m=-6} 2x^2 - 5x + 2 \rightarrow \Delta > 0 \checkmark$$

$$\begin{array}{l} m = 12 \text{ X} \\ m = -6 \checkmark \end{array}$$