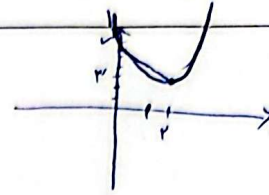
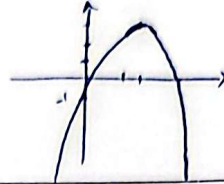


الف) $y = x^2 - 4x + 7 \rightarrow ext \begin{cases} x_s = -\frac{b}{2a} = 2 \\ y_s = 4 - 8 + 7 = 3 \end{cases}$

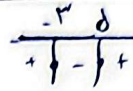


ب) $y = -x^2 + 4x - 1 \rightarrow ext \begin{cases} x_s = -\frac{b}{2a} = 2 \\ y_s = -4 + 4 - 1 = -1 \end{cases}$



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الف) $\Delta > 0 \Rightarrow m^2 + 2m + 1 - 4m - 12 > 0 \Rightarrow m^2 - 2m - 11 > 0 \Rightarrow (m-5)(m+3) > 0$



ب) $\Delta = 0 \Rightarrow m^2 - 2m - 11 = 0 \Rightarrow (m-5)(m+3) = 0 \Rightarrow m \in \{-3, 5\}$

ج) $\Delta < 0 \Rightarrow (m-5)(m+3) < 0 \Rightarrow m \in (-3, 5)$

د) $\Delta \geq 0 \Rightarrow (m-5)(m+3) \geq 0 \Rightarrow m \in (-\infty, -3] \cup [5, +\infty)$

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

الف) $\Delta > 0 \Rightarrow 4(m^2 + 2m + 1) - 4(m-2) > 0 \Rightarrow 4m^2 - 4m + 8 > 0 \Rightarrow m^2 - m + 2 > 0$

$S < 0 \Rightarrow \frac{2(m+1)}{m-2} < 0 \Rightarrow \frac{1}{1-\frac{1}{m}} < 0 \Rightarrow m \in (-1, 2)$

$P > 0 \Rightarrow \frac{1}{m-2} > 0 \Rightarrow m > 2 \Rightarrow m \in (2, +\infty)$

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$\Rightarrow m \in (-1, 2)$

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الف) $P < 0 \Rightarrow \frac{1}{m-2} < 0 \Rightarrow m \in (-\infty, 2)$

ب) $x_s = -2 \Rightarrow \frac{2(m+1)}{2(m-2)} = -2 \Rightarrow m+1 = -2m+4 \Rightarrow 3m = 3 \Rightarrow m = 1$

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$\Delta \geq 0 \Rightarrow 4 \sin^2 \alpha - 4 \geq 0 \Rightarrow \sin^2 \alpha \geq 1 \Rightarrow \sin \alpha = \pm 1$

$\Rightarrow \frac{4}{3}x^2 + 2x + \frac{4}{3} \Rightarrow S = -3$ غنق

ریشه منفی

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$\Rightarrow \sin = 1 \Rightarrow \frac{4}{3}x^2 - 2x + \frac{4}{3} = 0 \Rightarrow x^2 - 3x + \frac{4}{3} = 0 \quad (x - \frac{3}{2})^2 = 0 \Rightarrow x = \frac{3}{2}$

$$y = \frac{(2x^2 - 1x + 1)(2x^2 - 1x - 5)}{1 - 2x^2} = \frac{(x-1)(2x+1)(x+1)(2x-5)}{-(x-1)(x+1)} = -4x^2 + 12x + 5$$

$$\Rightarrow \text{ext} \left| \begin{array}{l} x_3 = \frac{-b}{2a} = \frac{12}{-4} \\ y_3 = \frac{2 \times 12^2 - 1 \times 12 + 1}{-4} \end{array} \right.$$

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$$r(\alpha + \beta) = \omega \alpha \beta + v$$

$$s = \frac{-b}{a} = \frac{m+r}{m}, \quad p = \frac{c}{a} = \frac{-r}{m}$$

$$\Leftrightarrow rs = \omega p + v \Rightarrow r \times \frac{m+r}{m} = \omega \times \frac{-r}{m} + v \xrightarrow{\times m} rm + r = -\omega r + vm$$

$$\Rightarrow \omega m = 19 \Rightarrow m = 19 \Rightarrow 2x^2 - 4x - 1 = 0$$

$$s = \frac{r}{r}, \quad p = \frac{-1}{r}$$

$$\alpha^r + \beta^r = s^r - rp = \frac{9}{2} + 1 = \frac{13}{2}$$

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$$x^2 - 5x + 1 = 0$$

$$\Rightarrow \begin{cases} p = \frac{c}{a} = 1 = \alpha\beta \Rightarrow \beta = \frac{1}{\alpha} \Rightarrow \beta^r = \frac{1}{\alpha^r} \\ s = \frac{-b}{a} = 5 \end{cases}$$

$$\frac{\alpha^r + \beta^r}{\alpha\beta^r} = \frac{\alpha^r}{\alpha\beta^r} + \frac{(\alpha^r\beta^r)}{\alpha\beta^r} = \frac{\alpha^r(\alpha^r + \beta^r)}{\alpha\beta^r} = \frac{125 - 3}{1} = \frac{122}{1} = 122$$

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$$y_1 = ax^r + bx + c \Rightarrow \begin{cases} y_1 = c \\ y_1 = -1 \end{cases} \Rightarrow c = -1 \Rightarrow y_1 = ax^r + bx - 1$$

$$y_1 = y_2 \Rightarrow ax^r + bx - 1 = 2x + 1 \Rightarrow ax^r + (b-2)x - 2 = 0$$

$$\Rightarrow y_1 = x^r + 2x + 1 \quad x_3 = \frac{-b}{2a} = \frac{-2}{2} = -1$$

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$$y = 2x^r + (m+1)x + m + 1 \quad \begin{cases} y = y_1 \\ y = x \end{cases} \Rightarrow \begin{cases} 2x^r + mx + m + 1 = 0 \\ \Delta = 0 \end{cases} \Rightarrow m^2 - 1m - 11 = 0$$

$$\Rightarrow (m-12)(m+1) = 0$$

$$m = 12 \quad m = -1$$

$$m = 12 \Rightarrow 2x^r + 12x + 13 = 0 \Rightarrow s = \frac{-b}{2a} = \frac{-12}{2} = -6$$

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