

الف) $y = x^2 - 4x + 7 \xrightarrow{a.c.} \text{est} \begin{cases} x_{\min} = \frac{-b}{2a} = \frac{4}{2} = 2 \\ y_{\min} = 2^2 - 4 \cdot 2 + 7 = 3 \end{cases}$ $c = 7$ ب) $y = -x^2 + 4x - 1 \xrightarrow{a.c.} \text{est} \begin{cases} x_{\max} = \frac{-b}{2a} = \frac{-4}{-2} = 2 \\ y_{\max} = -4 + 4 - 1 = -1 \end{cases}$ $c = -1$	۱
الف) $\Delta > 0 \rightarrow (m+1)^2 - 4(2)(\frac{1}{4}m+2) > 0 \Rightarrow 4m^2 + 4m - 4m - 16 > 0 \Rightarrow m^2 - 2m - 16 > 0 \Rightarrow (m-5)(m+3) > 0$ $\frac{-3}{-1} < \frac{5}{1} \Rightarrow m \in (-\infty, -3) \cup (5, +\infty)$ ب) $\Delta = 0 \rightarrow$ (طبق جدول تعیین علامت بالا) $\Rightarrow m \in \{-3, 5\}$ ج) $\Delta < 0 \rightarrow$ (طبق جدول تعیین علامت بالا) $\Rightarrow m \in (-3, 5)$ د) $\Delta > 0 \rightarrow$ (طبق جدول تعیین علامت بالا) $\Rightarrow m \in (-\infty, -3] \cup [5, +\infty)$	۲
الف) $\Delta > 0 \Rightarrow (2m+2)^2 - 4(1)(m-2) > 0 \Rightarrow 4m^2 + 8m + 4 - 4m + 8 > 0 \Rightarrow 4m^2 - 4m + 12 > 0 \Rightarrow m^2 - m + 3 > 0$ $\frac{-1}{1} < \frac{3}{1} \Rightarrow -1 < m < 3$ ① ② ϕ مربع مضارب ب) $\Delta > 0, P < 0, S < 0$ $\frac{c}{a} < 0 \rightarrow \frac{1}{m-2} < 0 \rightarrow m < 2$ $\frac{-b}{a} < 0 \rightarrow \frac{2m+2}{m-2} < 0 \rightarrow -1 < m < 2$ طبق اصل علامت برقرار ③ $m \in (-1, 2)$	۳
الف) $\Delta > 0 \rightarrow$ طبق جدول سوال قبل علامت برقرار است مربع مضارب علامت باید باشد $P < 0 \rightarrow \frac{1}{m-2} < 0 \Rightarrow m < 2$ ④ $m < 2$ ب) محور شیب = $\frac{-b}{2a} = -2 \Rightarrow \frac{2m+2}{m-2} = -2 \Rightarrow -4m + 8 = 2m + 2 \Rightarrow -4m = -6 \Rightarrow m = 1$ ⑤ $m = 1$	۴
$\Delta > 0 \Rightarrow 4 \sin^2 \alpha - 4(\frac{r}{4})(\frac{r}{4}) > 0 \Rightarrow 4 \sin^2 \alpha - r > 0 \Rightarrow 4 \sin^2 \alpha > r \Rightarrow \sin^2 \alpha > \frac{r}{4}$ ریشه صحیح $\Delta > 0$ $(0 < \sin^2 \alpha < 1) \Rightarrow \sin^2 \alpha = 1 \rightarrow \sin \alpha = \pm 1$ $\sin \alpha = 1 \Rightarrow \frac{r}{4} x^2 - 2x + \frac{r}{4} = 0 \rightarrow \Delta = 4 - 4(\frac{r}{4})(\frac{r}{4}) = 0 \Rightarrow x = \frac{2 \pm \sqrt{0}}{\frac{r}{2}} = \frac{4}{r}$ $\sin \alpha = -1 \Rightarrow \frac{r}{4} x^2 + 2x + \frac{r}{4} = 0 \rightarrow \Delta = 4 - 4(\frac{r}{4})(\frac{r}{4}) = 0 \Rightarrow x = \frac{-2 \pm \sqrt{0}}{\frac{r}{2}} = -\frac{4}{r}$ ⑥ $\cos$	۵

$$y = \frac{(r_n^r - r_{n-1})(r_n^r - r_n - \omega)}{1 - x^r} \rightarrow r_n^r - r_{n-1} \rightarrow a + b + c = 0 \Rightarrow x_1 = 1, x_2 = -\frac{1}{r}$$

$$r_n^r - r_n - \omega \rightarrow a + c = b \Rightarrow x_1 = -1, x_2 = \frac{\omega}{r}$$

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$$y = \frac{-(n-1)(x + \frac{1}{r})(x+1)(n - \frac{\omega}{r})}{(1+x)(1-x)} = -(n + \frac{1}{r})(n - \frac{\omega}{r}) = -x^r + \frac{14}{4}x + \frac{\omega}{4} \Rightarrow -4n^2 + 14n + \omega$$

$$y = \frac{-\Delta}{\epsilon a} = \frac{-(14a - 2(-4)(\omega))}{-2\epsilon} = \frac{r\omega a}{r\epsilon}$$

$$S = \alpha + \beta = \frac{-b}{r\alpha} = \frac{m+r}{m} \quad P = \alpha \cdot \beta = \frac{c}{\alpha} = \frac{-r}{m}$$

$$r(\alpha + \beta) = \omega \alpha \beta + r \rightarrow r(\frac{m+r}{m}) = \frac{-10}{m} + r \rightarrow \frac{r(m+r)}{m} = \frac{-10+r}{m} \rightarrow r(m+r) = -10+r \rightarrow \begin{cases} m=14 \\ m=-2 \end{cases}$$

$$\alpha^r + \beta^r = S^r - rP = (\alpha + \beta)^r - r\alpha\beta = \frac{q}{\epsilon} + \frac{r}{\epsilon} = \frac{14}{\epsilon}$$

$$S = \frac{-b}{\alpha} = \omega \rightarrow \alpha + \beta = \omega \Rightarrow \alpha = \omega - \beta \quad \text{بما أن } \beta = \omega \alpha \beta + r \Rightarrow \beta^r = \omega \beta + r \Rightarrow \beta^r = \omega \beta + r$$

$$\beta^r = (\omega \beta + r)^r = r\omega \beta^r + r \cdot \beta + \epsilon \rightarrow r\omega(\omega \beta + r) + r \cdot \beta + \epsilon = 0 \Rightarrow \beta^r = 1 \cdot \omega \beta - \epsilon 4 \xrightarrow{\beta^r = \omega \beta + r} \beta^r = \omega \beta + r - \epsilon 4$$

$$\rightarrow \beta^r = \epsilon 4 \omega \beta - r 1$$

$$\frac{r\alpha + \beta^r}{\omega \beta^r} = \frac{\epsilon(\omega - \beta) + \epsilon 4 \omega \beta - r 1}{\omega(\omega \beta + r)} = \frac{r\omega \omega \beta - 19}{r\omega \beta - 10} = \frac{19(r\omega \beta - 10)}{r\omega \beta - 10} = 19$$

$$\left. \begin{aligned} \alpha n^r + b n + c = 0 \\ r n + 10 \end{aligned} \right\} \rightarrow \left. \begin{aligned} (9a - 12b + c = \epsilon) \\ 2a + 12b + c = 12 \end{aligned} \right\} \Rightarrow \begin{aligned} -2a + 2b = 10 &\rightarrow a + b = 10 \\ 9a - 12b = 0 &\rightarrow 3a = 4b \\ \frac{3a}{4} = 10 &\Rightarrow a = \frac{40}{3}, b = \frac{10}{3} \end{aligned}$$

$$r_1 \alpha n^r + r_2 \alpha n + r_3 = 0 \rightarrow \text{حل } \frac{-b}{r\alpha} = \frac{-r_2 \omega}{r(r_1 \alpha)} = -1/\omega$$

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$$y = r n^r + (m+1)x + m + 4$$

$$r n^r + (m+1)x + m + 4 = x$$

$$r n^r + m x + m + 4 = 0$$

$$\Delta = 0 \Rightarrow m^r - 2(r)(m+4) = 0 \rightarrow m^r - 14m - \epsilon 1 = 0 \Rightarrow (m-14)(m+2) = 0$$

$$m = 14$$

$$m = -2$$

$$m = 14 \rightarrow r n^r + 14n + 18 \rightarrow \text{مستقيمات متوازية}$$

$$m = -2 \rightarrow r n^r - 2n + 2 \rightarrow \text{مستقيمات متوازية} \Rightarrow m = -5$$

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