

ext $\left| \begin{array}{l} -\frac{b}{a} = -1 \rightarrow b = a \\ \frac{-\Delta}{a} = \frac{-b^2 + 4ac}{a} = \frac{-(a^2) + 4ac}{a} = \frac{4a(-a+c)}{a} = 9 \rightarrow c = a+9 \end{array} \right.$

$(r, 1) \rightarrow 1 = 9a + 3b + c \xrightarrow{a+9} 1 = 9a + 3a + a + 9 \rightarrow -1 = 13a \rightarrow a = -\frac{1}{13} / b = -1 / c = \frac{8}{13}$

$y = -\frac{1}{13}x^2 - x + \frac{16}{13} \Rightarrow 13y = -x^2 - 13x + 16$

ریشه $\rightarrow \Delta > 0 \rightarrow b^2 - 4ac > 0 \rightarrow m^2 - 4m - 4 > 0 \rightarrow (m-12)(m+4) > 0 \rightarrow \frac{-4}{+} \frac{12}{+}$

ریشه مثبت $\rightarrow S > 0 \rightarrow \frac{-b}{a} > 0 \rightarrow \frac{-m}{1} > 0 \rightarrow -m > 0 \rightarrow m < 0 \rightarrow (-\infty, -4) \cup (12, +\infty)$

$\rho > 0 \rightarrow \frac{c}{a} > 0 \rightarrow \frac{m+4}{1} > 0 \rightarrow m+4 > 0 \rightarrow m > -4 \rightarrow (-4, +\infty)$

$[(-\infty, -4) \cup (12, +\infty)] \cap (-\infty, 0) \cap (-4, +\infty) = (-4, -4)$

$S = \frac{1}{\rho} \rightarrow \frac{-b}{a} = \frac{1}{\frac{c}{a}} \rightarrow \frac{-b}{a} = \frac{a}{c} \rightarrow \frac{-2m+1}{1} = \frac{1}{1-m} \rightarrow 9 = -4m + 2m^2 + 1 - m$

$\rightarrow 2m^2 - 5m - 8 = 0 \xrightarrow{a+c=b} m = -1, m = \frac{-c}{a} = \frac{1}{1}$

$m = 1 \rightarrow 3m^2 - 3m + 3 = 0 \rightarrow \Delta = 9 - 36 < 0 \rightarrow$ ریشه ندارد

$m = \frac{1}{1} \rightarrow 3m^2 + 4m - \frac{1}{1} = 0 \checkmark \rightarrow$ ریشه دارد $\Rightarrow m = \frac{1}{1}$

$x^2 - 5x + 6 = 0$

$\begin{array}{l} S=1 \\ \rho=-4 \end{array} \rightarrow \begin{array}{l} (x_1 + x_2)^2 = x_1^2 + 2x_1x_2 + x_2^2 \\ x_1 + x_2 = 5 \\ x_1x_2 = -6 \end{array}$

$\begin{array}{l} S \\ \rho \end{array} \rightarrow \begin{array}{l} x_1^2 + \frac{1}{x_1} + x_2^2 + \frac{1}{x_2} = \frac{x_1^2 + x_2^2}{1} + \frac{1}{x_1x_2} = \frac{5^2 - 2(-6)}{-6} = \frac{25 + 12}{-6} = \frac{37}{-6} \\ (x_1^2 + \frac{1}{x_1})(x_2^2 + \frac{1}{x_2}) = (x_1x_2)^2 + \frac{x_1^2 + x_2^2}{x_1x_2} + \frac{1}{x_1x_2} = \frac{36}{-6} + \frac{37}{-6} = \frac{73}{-6} \end{array}$

$\rightarrow x^2 + \frac{37x}{6} - \frac{73}{6} = 0 \rightarrow 6x^2 + 37x - 73 = 0$

$\sqrt{n} = \pm \rightarrow (\pm^2 + \frac{1}{\pm^2} + 1)(\pm^2 - 1) = \frac{\pm^2}{\pm} \rightarrow (\pm^2 + \frac{1}{\pm^2} + 1)(\pm - \frac{1}{\pm}) = 2 \rightarrow \pm^2 - \frac{1}{\pm^2} = 2$

$\pm = \sqrt{n} \rightarrow \pm^2 = n \rightarrow x - \frac{1}{x} = 2 \rightarrow x^2 - 2x - 1 = 0 \rightarrow x = \frac{2 \pm \sqrt{4+4}}{2}$

$x = \frac{2 \pm 2\sqrt{2}}{2} = 1 \pm \sqrt{2} \xrightarrow{x_1 + x_2} 1 + \sqrt{2} + 1 - \sqrt{2} = 2$

$\alpha, \beta \rightarrow \beta = 3\alpha$ $S = \alpha + 3\alpha = 4\alpha = \frac{a}{r} \rightarrow a = 4r\alpha$ $\text{افتان ریشه} = \frac{\sqrt{\Delta}}{ a } = \frac{\sqrt{a^2 - 4r}}{4} = \frac{4\alpha^2 - 4r}{4} = \alpha^2 - r \rightarrow \frac{r}{\alpha^2} \times \sqrt{a^2 - 4r} = 4r\alpha$ $\text{افتان } a = 1 - (-1) = (12)$ $a = \pm 1$	6
$\begin{cases} \text{افتان} \\ \text{ریشه} \end{cases} \begin{cases} a > 0 \rightarrow \text{Min} \\ \Delta > 0 \rightarrow (r+3a)^2 > 0 \rightarrow r \\ S > 0 \rightarrow \frac{-r-3a}{a} > 0 \rightarrow \frac{-r}{-1+3} > 0 \rightarrow [-\frac{r}{2}, 0) \\ P > 0 \rightarrow \frac{c}{a} = 0 \rightarrow \text{هواره برآست} \end{cases}$ $\begin{cases} \text{بالاتر} \\ \text{پایین} \end{cases} \begin{cases} a > 0 \\ \Delta < 0 \rightarrow (r+3a)^2 < 0 \quad \times \\ S < 0 \\ P < 0 \end{cases}$ $(0, +\infty) \cap r \cap [-\frac{r}{2}, 0) \cap R = \emptyset$	7
$\frac{-b}{ra} \text{ د } 1 = \frac{-b}{ra} \text{ د } 2 \rightarrow \frac{-a}{r} = \frac{+r}{-r} \rightarrow -a = -r \rightarrow a = r$ $y=1 \rightarrow \begin{cases} 1 = n^2 + 2n - 2 \rightarrow n^2 + 2n - 3 = 0 \rightarrow (n+3)(n-1) = 0 \rightarrow n = -3, n = 1 \\ 1 = -n^2 - 2n + b \xrightarrow{n=1} 1 = -1 + 2 + b \rightarrow b = 2 \\ \xrightarrow{n=-3} 1 = -9 + 6 + b \rightarrow b = 4 \end{cases} \rightarrow \begin{cases} ab = 2 \times 4 = 8 \end{cases}$	8
$r_n^2 - an + b = 0 \xrightarrow{\text{ریشه}} (\alpha + 0, \omega), (\beta + 1, \omega) \rightarrow S = \alpha + \beta + 1 = \frac{a}{r} \rightarrow \alpha + \beta = \frac{a}{r} - 1$ $ran^2 + an - 4 = 0 \xrightarrow{\text{ریشه}} \alpha, \beta \rightarrow \alpha + \beta = \frac{-a}{ra} = \frac{-1}{r} \rightarrow \frac{1}{r} = \frac{a}{r} - 1 \rightarrow \frac{1}{r} + \frac{r}{r} = \frac{a}{r}$ $(a=1) \rightarrow ran^2 + n - 4 = 0 \rightarrow \frac{-1 \pm \sqrt{1+16}}{r} \rightarrow \alpha = \frac{3}{r}, \beta = -\frac{4}{r} \rightarrow \alpha + 0, \omega = \frac{3}{r} / \beta + 1, \omega = -\frac{4}{r}$ $\rightarrow \rho = \frac{c}{a} = \frac{b}{r} = \frac{-r}{r} \times \frac{4}{r} = -4 \rightarrow (b = -4)$ $\left[\frac{ab}{r} \right] = \left[\frac{-4}{r} \right] = [-1, 5] = (-2)$	9
$x^2 + 4x + m = 0 \xrightarrow{\text{ریشه}} \alpha, \beta \rightarrow S = \alpha + \beta = -4 \quad S = \frac{-b}{a}$ $x^2 + 4x - 2m = 0 \xrightarrow{\text{ریشه}} \alpha, \theta \rightarrow S = \alpha + \theta = -4$ $\frac{ \theta - \beta }{r} = (4)$	10