

$rx^r - ax + b = 0 \rightarrow \alpha, \beta$ $r\alpha x^r + ax - 4 = 0 \rightarrow \alpha', \beta' \rightarrow \alpha + \beta = \alpha' + 0, \omega + \beta' + 0, \omega \quad \alpha + \beta = \alpha', \beta' + 1$ $\rightarrow \frac{a}{r} = \frac{-a}{ra} + 1 \rightarrow \frac{\alpha+1}{r} = 1 \quad a=1 \quad \frac{r\alpha x^r + ax - 4}{r} \rightarrow rx^r + x - 4 \Rightarrow x^r + x - 1r = 0$ $\Rightarrow (x+r)(x-3) \rightarrow x_1 = -r \quad x_r = \frac{3}{r}$ $\alpha' \beta' \xrightarrow{\text{مقادیر اول}} \frac{b}{r} = -r \times \frac{3}{r} \rightarrow \frac{b}{r} = -3 \quad b = -4 \quad \left[\frac{ab}{r} \right] = \left[\frac{+1 \times -4}{r} \right] = \left[\frac{-4}{r} \right] = \boxed{-2}$	6
$a x^r - a x - b = 0 \xrightarrow{\text{مستند}} \alpha + \beta = 1 \quad \beta = 1 - \alpha$ $r_0 \beta^r + r_0 \alpha^r - r_0 \beta = 1V \xrightarrow{\beta = 1 - \alpha} r_0 (1 - \alpha)^r + r_0 \alpha^r - r_0 (1 - \alpha) = 1V \Rightarrow$ $r_0 (1 - \alpha)^r + r_0 \alpha^r - r_0 (1 - \alpha) = 1V \rightarrow 40\alpha^r - 40\alpha + r_0 - 1V \rightarrow 40\alpha^r - 40\alpha + 3(r_0 \alpha^r - r_0 \alpha + 1) = 0 \quad \Delta = 3r_0$ $\alpha = \frac{r_0 \pm \sqrt{3r_0}}{r_0} = \frac{r_0 \pm \sqrt{3}\sqrt{r_0}}{r_0} = \frac{\omega \pm \sqrt{3}\omega}{10}$ $x_1 - x_r = \frac{\omega + \sqrt{3}\omega}{10} - \frac{\omega - \sqrt{3}\omega}{10} = \frac{2\sqrt{3}\omega}{10} = \boxed{\frac{2\sqrt{3}\omega}{5}}$	7
$x^r - (a+1)x + a = 0 \xrightarrow{\text{نویس}} (r_n - 1) + (r_n + 1) = f_n \quad f_n = a + 1 \quad a = f_n - 1$ $\rightarrow (r_n - 1)(r_n + 1) = f_n^r - 1 \quad f_n^r - 1 = a \Rightarrow f_n^r - 1 = f_n - 1 \quad f_n^r - f_n = 0$ $f_n(n-1) = 0 \quad n=1 \quad n=0 \xrightarrow{n=1} f(1) = a+1 \quad a=3$ $x^r - (3a+1)x + b \xrightarrow{a=3} x^r - 10x + b \xrightarrow{\text{نویس}} (r_n) + (r_n + 2) = 10 \quad n=2$ $(r_n)(r_n + 2) = f_n^r + f_n \xrightarrow{n=2} 2f = b \quad b - a = 2f - 3 = \boxed{21}$	8
$x^r + x - 1 - m^r = 0 \quad \text{کوتاه} \alpha^r, \beta^r$ $\begin{cases} \alpha + \beta = -1 \\ \alpha\beta = -1 - m^r \end{cases} \quad \alpha^r + \beta^r = (\alpha + \beta)^r - r\alpha\beta \Rightarrow (-1)^r - r(-1 - m^r) \Rightarrow$ $\frac{3 + 2m^r}{m} \rightarrow m = 0 \rightarrow \boxed{3}$ m همان بزرگتر مساوی صفر $m \geq 0$	9
$A(r, y) \text{ عرضی} = 1 \quad y \text{ موازی} \rightarrow x' = \frac{\alpha + \beta}{r} \rightarrow \frac{-\omega + 3}{r} = -1 \rightarrow \frac{-b}{ra} = \frac{-b}{a} = -2$ $B(-\omega, y) \quad \alpha^r + \beta^r = \omega$ $y - 1 = a(x + 1) \rightarrow y = ax + rax + a + 1 \quad p = \frac{a+1}{a} \quad s = -r$ $\alpha^r + \beta^r = \omega \quad s^r - 2p = \omega \quad (-r)^r - r\left(\frac{a+1}{a}\right) = \omega \quad r - \frac{ra+1}{a} = \omega \quad a = -\frac{r}{3}$ $\Rightarrow \text{مقادیر اول} \rightarrow a+1 = \frac{-r}{3} + 1 = \boxed{\frac{1}{3}}$	10