

نام و نام خانوادگی شماره ۱۹ کلاس (۱۹)

$$3x^2 - \alpha x + 1 = 0$$

$$\alpha = 3\beta \rightarrow \alpha\beta = \frac{1}{3} \quad 3\beta^2 = \frac{1}{3} \quad \beta^2 = \frac{1}{9} \quad \beta = \frac{1}{3} \rightarrow \alpha = 1 \rightarrow s = \frac{1}{3}$$

$$\beta = -\frac{1}{3} \rightarrow \alpha = -1 \rightarrow s = -\frac{1}{3}$$

$$\alpha + \beta = \frac{a}{3} \rightarrow \frac{a}{3} = \frac{1}{3} \quad a_1 = 1$$

$$\frac{a}{3} = -\frac{1}{3} \quad a_2 = -1$$

$$a_1 - a_2 = 14$$

$$34x^2 - (m+1)x + 1 = 0 \quad \sqrt{\frac{1}{\alpha}} + \sqrt{\frac{1}{\beta}} = \omega \quad \frac{\sqrt{\alpha} + \sqrt{\beta}}{\sqrt{\alpha\beta}} = \frac{\alpha + \beta + 2\sqrt{\alpha\beta}}{\frac{1}{4}} = (\omega)$$

$$\alpha\beta = \frac{1}{34}$$

$$\alpha + \beta = \frac{m+1}{34} \rightarrow \frac{\alpha + \beta + 2\sqrt{\frac{1}{34}}}{\frac{1}{4}} = \omega \quad \alpha + \beta = \left(\frac{\omega}{4}\right)^2 - \frac{1}{34} \quad \alpha + \beta = \frac{13}{34}$$

$$\frac{m+1}{34} = \frac{13}{34} \quad m = -1 \quad m\alpha^2 + 3\alpha + 1 \xrightarrow{m=-1} -\alpha^2 + 3\alpha + 1 = 0$$

$$\alpha\beta = -2$$

$$x^3 + kx^2 - 9x - 2 = 0$$

$$\alpha + \beta = 1 \quad \alpha\beta = -2 \quad \left\{ \begin{array}{l} x^2 - 5x + 6 \Rightarrow x^2 - x - 2 = 0 \quad (x-2)(x+1) \end{array} \right.$$

$$x=2 \rightarrow f(2) + k(2) - 18 - 2 = 0 \quad f(2) = -12 \quad k = -3$$

$$x=-1 \rightarrow f(-1) + k(-1) + 9 - 2 = 0 \quad k = -3$$

$$k = -3$$

$$x^2 + 4x + a = 0 \quad 3x^2 + 2\beta^2 = 12\sqrt{2} + 12a$$

$$\Delta = b^2 - 4ac = 16 - 4a \quad x = \frac{-4 \pm \sqrt{16 - 4a}}{2} \rightarrow x = -2 \pm \sqrt{4 - a}$$

$$3x^2 + 2\beta^2 \rightarrow 3(12 - a - 4\sqrt{4 - a}) + 2(12 - a + 4\sqrt{4 - a}) = 0$$

$$36 - 3a - 12\sqrt{4 - a} + 24 - 2a + 8\sqrt{4 - a} = 0 \quad 60 - 5a - 4\sqrt{4 - a} = 0$$

$$5a + 4\sqrt{4 - a} = 60 \rightarrow 5a = 60 \rightarrow a = 12$$

$$x^2 - vx^2 - \omega = 0 \quad t = x^2 \quad t^2 - vt - \omega = 0 \rightarrow \Delta = 49 + 4\omega = 49$$

$$x^2 = \frac{v \pm \sqrt{49}}{2} \rightarrow x = \pm \sqrt{\frac{v \pm 7}{2}}$$

$$s = 0$$

$$p = \alpha \times \beta \rightarrow \left(\frac{v + \sqrt{49}}{2}\right) \left(\frac{v - \sqrt{49}}{2}\right) = \frac{49 - 49}{4} = -5$$

$$2p^2 - 3sp + 2s = 0 \rightarrow 2(-5)^2 = 50$$

$$x^2 = \frac{v \pm \sqrt{49}}{2} \rightarrow x_1 = \frac{v + \sqrt{49}}{2} \rightarrow s = 0 \quad p = \left(\frac{-v + \sqrt{49}}{2}\right)$$

$$2p^2 - 3sp + 2s = 50 + \sqrt{49}$$

$rx^2 - ax + b = 0 \rightarrow \alpha, \beta$ $rx^2 + ax - 4 = 0 \rightarrow \alpha', \beta'$ $\alpha + \beta = \alpha' + 1, \omega + \beta' + 1 \Rightarrow \alpha + \beta = \alpha', \beta' + 1$ $\rightarrow \frac{a}{r} = \frac{-a}{ra} + 1 \rightarrow \frac{a+1}{r} = 1 \Rightarrow a = 1$ $rx^2 + ax - 4 \Rightarrow rx^2 + x - 4 \Rightarrow x^2 + x - 4r = 0$ $\Rightarrow (x+2)(x-3) \rightarrow x_1 = -2, x_2 = 3$ $\alpha\beta \xrightarrow{\text{مقادیر اولی}} \frac{b}{r} = -2 \times \frac{3}{r} \rightarrow \frac{b}{r} = -3 \Rightarrow b = -4$ $\left[\frac{ab}{r}\right] = \left[\frac{+1 \times -4}{r}\right] = \left[\frac{-4}{r}\right] = \boxed{-2}$	5
$ax^2 - ax - b = 0 \xrightarrow{\text{مستند}} \alpha + \beta = 1, \beta = 1 - \alpha$ $r_0\beta^2 + r_0\alpha^2 - r_0\beta = 1V \xrightarrow{\beta=1-\alpha} r_0(1-\alpha)^2 + r_0\alpha^2 - r_0(1-\alpha) = 1V \Rightarrow$ $r_0(1 - 2\alpha + \alpha^2) + r_0\alpha^2 - r_0 + r_0\alpha = 1V$ $\rightarrow 4r_0\alpha^2 - 4r_0\alpha + r_0 - 1V = 0 \rightarrow 4r_0\alpha^2 - 4r_0\alpha + r_0 - 1V = 0$ $\Delta = 16r_0^2 - 4r_0(r_0 - 1V) = 16r_0^2 - 4r_0^2 + 4r_0V = 12r_0^2 + 4r_0V$ $\alpha = \frac{4r_0 \pm \sqrt{12r_0^2 + 4r_0V}}{8r_0} = \frac{r_0 \pm \sqrt{3r_0V}}{2r_0} = \frac{\omega \pm \sqrt{3}\omega}{10}$ $x_1 - x_2 = \frac{\omega + \sqrt{3}\omega}{10} - \frac{\omega - \sqrt{3}\omega}{10} = \frac{2\sqrt{3}\omega}{10} = \boxed{\frac{\sqrt{3}\omega}{5}}$	5
$x^2 - (a+1)x + a = 0 \xrightarrow{\text{مستند}} (r_n - 1) + (r_n + 1) = f_n, f_n = a + 1, a = f_n - 1$ $\rightarrow (r_n - 1)(r_n + 1) = f_n^2 - 1, f_n^2 - 1 = a \Rightarrow f_n^2 - 1 = f_n - 1, f_n^2 - f_n = 0$ $f_n(f_n - 1) = 0, n=1, n=0 \xrightarrow{n=1} f(1) = a + 1, a = 3$ $x^2 - (3a+1)x + b = 0 \xrightarrow{a=3} x^2 - 10x + b = 0 \xrightarrow{\text{مستند}} (r_n) + (r_n + 2) = 10, n=2$ $(r_n)(r_n + 2) = f_n^2 + f_n, n=2, 2f = b, b - a = 2f - 3 = \boxed{21}$	5
$x^2 + x - 1 - m^2 = 0$ کسری α^2, β^2 $\alpha + \beta = -1$ $\alpha\beta = -1 - m^2$ $\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta \Rightarrow (-1)^2 - 2(-1 - m^2) = 1 + 2 + 2m^2 = 3 + 2m^2$ $\xrightarrow{m \text{ همواره بزرگتر مساوی صفر}} m \geq 0$ $3 + 2m^2 \rightarrow m = 0 \rightarrow \boxed{3}$	9
$A(3, y)$ عرض $y = 1$ $\xrightarrow{\text{مقادیر اولی}} x' = \frac{\alpha + \beta}{r} \rightarrow \frac{-\omega + 3}{r} = -1 \rightarrow \frac{-b}{ra} = \frac{-b}{a} = -2$ $B(-\omega, y)$ $\alpha^2 + \beta^2 = \omega$ $y - 1 = a(x + 1) \rightarrow y = ax + 2ax + a + 1, p = \frac{a+1}{a}, s = -2$ $\alpha^2 + \beta^2 = \omega, s^2 - 2p = \omega, (-2)^2 - 2\left(\frac{a+1}{a}\right) = \omega, 4 - \frac{2a+2}{a} = \omega, a = -\frac{2}{\omega}$ $\Rightarrow \text{مقادیر اولی با هم برابر} \rightarrow a + 1 = \frac{-2}{\omega} + 1 = \boxed{\frac{1}{\omega}}$	15