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$$\alpha + \beta = 5 \rightarrow \alpha \cdot \beta = 2 \Rightarrow \alpha = \frac{2}{\beta} \rightarrow \frac{\alpha^2 + \beta^2}{(\alpha + \beta)^2} = \frac{\beta^2 + \frac{4}{\beta^2}}{25} = \frac{\beta^4 + 4}{25\beta^2} = \frac{\beta^4 + 4 - 2\beta^2 + 2\beta^2}{25\beta^2} = \frac{(\beta^2 - 2)^2 + 4\beta^2}{25\beta^2} = \frac{25 - 4\beta^2 + 4\beta^2}{25} = \frac{25 - 4}{25} = \frac{21}{25}$$

۲ دو نقطه داده شده عرض بلدشان دارند یعنی نسبت به جغرافیای سویی (n = n\_s) قیاس اند که بلدشان محل حسابان  
 مایل رأس را به مایل دهد:  $\alpha_s = \frac{3 - 1.5}{2} = 0.75$   
 و داریم  $n_s = \frac{-b}{2a}$  جمع ریشه ها  $\frac{-b}{a}$  است جمع ریشه ها (مضرب جمع)  $1.5$

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$$\frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{4k^2 - 20}}{1} = 2\sqrt{k^2 - 5} = \frac{4}{3}k \xrightarrow{\text{مربع}} \frac{4k^2 - 20}{9} = \frac{16}{9}k^2 \rightarrow \frac{4k^2 - 20}{9} = \frac{16k^2}{9} \rightarrow 4k^2 - 20 = 16k^2 \rightarrow -12k^2 = -20 \rightarrow k^2 = \frac{5}{3} \rightarrow k = \pm \sqrt{\frac{5}{3}}$$

۴ نقاط A, B و y بلدشان دارند ← نسبت به جغرافیای سویی قیاس اند ← ی داریم:  $y_s = 1$   
 $\alpha + \beta = 5 - 2p = 5$  ریشه ها  $\alpha, \beta$   
 $a_s = \frac{m_A + m_B}{2} = \frac{-2}{2} = -1 \rightarrow y = a(m - a_s)^2 + y_s$   
 $\rightarrow y = a(m + 1)^2 + 1$   
 $= am^2 + \frac{2am}{b} + \frac{a+1}{c}$   
 $4 - 2p = 5 \leftarrow \frac{5 - b}{a} = \frac{5 - 2}{a} = \frac{3}{a} = -2 \leftarrow$   
 $-a = 3a + 2 \leftarrow \frac{1}{a} = \frac{a+1}{a} \leftarrow p = \frac{-1}{2} \leftarrow p = \frac{c}{a} = \frac{a+1}{a}$   
 $a = \frac{2}{3}$

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$$\alpha < \beta < \frac{9}{2} \text{ و } \Delta > 0 \rightarrow b^2 > 4ac \rightarrow 10 > 4 \cdot m \rightarrow \frac{10}{4} > m \rightarrow m < \frac{5}{2}$$

نقشه اعداد:  $\alpha \quad \beta \quad \frac{9}{2}$  (نقشه علامت)  $(a = -1)$

$m = \frac{9}{4}$   $\Rightarrow \frac{-11}{4} + \frac{5}{4} + m < 0 \Rightarrow m < \frac{9}{4}$

مقادیر صحیح:  $-4, -3, -2, -1, 0, 1, 2, 3, 4$

مقادیر صحیح:  $m < -2.5$  (۱۱)  $-4.25 < m < -\frac{9}{4}$  (۱۲)  $-\frac{9}{4} < m < \frac{9}{4}$  (۱۳)

$$y_s = \frac{-\Delta}{\epsilon a_1} = \frac{\epsilon a c - b^2}{\epsilon a_1} = \frac{\epsilon a m^2 - \epsilon m + 1 \epsilon \epsilon}{\epsilon x m} = \frac{a m^2 - m - \epsilon \epsilon}{m} = 2 \rightarrow a m^2 - m - \epsilon \epsilon = 2 m$$

$$a m^2 - 2 m - \epsilon \epsilon = 0$$

$$a=2: \text{حل معادله} \leftarrow m_2 = \frac{12}{2} = 2 \leftarrow m=2$$

$$m > 0 \leftarrow \text{تابع} \leftarrow m = -\frac{b}{2a}$$

$$a_2 = \frac{-b}{2a} \leftarrow m = 2, \epsilon \epsilon: \div 4$$

$$m^2 - 2m - 11 \epsilon \epsilon = 0$$

$$(m-10)(m+11) = 0$$

$$\downarrow \quad \downarrow$$

$$10 \quad -11$$

$$\alpha \beta = p = a^2 \rightarrow y = a^2 - 5a + p$$

$$y = a^2 + (a+1)m + \epsilon a - 1$$

$$p = a^2 = \epsilon a - 1$$

$$a^2 - \epsilon a + 1 = 0$$

$$(a-1)^2 = 0$$

$$a = 1$$

$$\Delta > 0$$

$$y = a^2 + \epsilon(a+1)$$

$$12 > 0 \checkmark$$

$$m^2 = t \rightarrow t^2 - 4t - 8 = 0 \rightarrow \Delta = 16 + 32 = 48 \rightarrow t = \frac{4 \pm \sqrt{48}}{2} \rightarrow \frac{4 \pm \sqrt{48}}{2} = a^2 \checkmark$$

$$2p^2 - 3p + 2 = 2 \left( \frac{(4 \pm \sqrt{48})^2}{4} \right) = 2 \times \frac{16 \pm 32\sqrt{3} + 48}{4} = 8 \pm 16\sqrt{3}$$

$$S = 0 = \text{حاصل} \leftarrow a = \pm \sqrt{\frac{4 \pm \sqrt{48}}{2}}$$

$$p = \frac{-4 \pm \sqrt{48}}{2} = \text{حاصل}$$

$$a_2 = \frac{-b}{2a} = \frac{2}{k} \rightarrow y = -\frac{\epsilon a_1 - \epsilon}{2} \Rightarrow y = -\frac{\epsilon}{2} \times \frac{2}{k} - \epsilon = \frac{-1 - \epsilon k}{k}$$

$$y_s = \frac{-\Delta}{\epsilon a} = \frac{-b^2 + \epsilon a c}{\epsilon a} = \frac{-16 - 2 \epsilon k}{\epsilon k} = \frac{-1 - \epsilon k}{k}$$

$$\frac{1 + \epsilon k}{k} = \frac{1 + \epsilon k}{k}$$

$$\epsilon + \epsilon k = 1 + \epsilon k \leftarrow k = 2$$

$$y_s = \frac{-1 - \epsilon(2)}{2} = -1$$

$$-m a^2 + m a + 1 = m - m \rightarrow \frac{m}{a} a^2 + \frac{(-m-1)}{b} a - \frac{1-m}{c}$$

$$\Delta = b^2 - 4ac < 0$$

$$m^2 + 2m + 1 + \epsilon(m)(m+1) < 0$$

$$\epsilon m^2 + \epsilon m$$

$$a m^2 + 4m + 1 < 0$$

$$m = -1$$

$$m = \frac{-\epsilon}{a} = \frac{-1}{2}$$

$$-1 < m < -\frac{1}{2}$$