

$$\left. \begin{array}{l} x = -1 \\ a - b + c = 9 \\ x = 5 \\ 9a + 5b + c = 1 \end{array} \right\} \Rightarrow 1a + 1a = -1 \Rightarrow 19a = -1 \Rightarrow a = -\frac{1}{19} \quad (1)$$

$$\downarrow$$

$$b = -1$$

$$\frac{-b}{19a} = -1 \Rightarrow b = 19a$$

$$a - b + c = 9 \Rightarrow -\frac{1}{19} + 1 + c = 9$$

$$\frac{1}{19} + c = 9 \Rightarrow c = \frac{170}{19}$$

$$\left(-\frac{1}{19} - 1 + \frac{170}{19} = 0 \right) : \text{مطلوب}$$

$$\Delta = m^2 - 14m - 51 > 0$$

$$9\varepsilon + 19\varepsilon = 20\varepsilon \Rightarrow m = \frac{14 \pm 19\varepsilon}{2} = \begin{cases} 17\varepsilon \\ -\varepsilon \end{cases} \Rightarrow -\varepsilon > m > -9$$

$$\frac{-b}{a} > 0 \Rightarrow -\frac{m}{19} > 0 \Rightarrow m < 0$$

$$\frac{c}{a} > 0 \Rightarrow \frac{m+9}{19} > 0 \Rightarrow m > -9$$

$$\frac{1-19m}{19} = \frac{5}{19-m} \Rightarrow 19m^2 - 14m + 1 = 9 \Rightarrow 19m^2 - 14m - 8 = 0$$

$$\Delta = 14^2 + 4 \cdot 19 \cdot 8 = 1111 \quad m = \frac{14 \pm 33.3}{38} = \begin{cases} \frac{47.3}{38} \\ -1 \end{cases}$$

$$x_1 + x_2 = 1 \quad x_1, x_2 = -\varepsilon \quad x_1^{-1} + \frac{1}{x_2} = A \quad x_2^{-1} + \frac{1}{x_1} = B \quad (5)$$

$$A + B = \frac{1}{x_2} + \frac{1}{x_1} + x_1^{-1} + x_2^{-1} = \frac{x_2 + x_1}{x_1 x_2} - x_1^{-1} + x_2^{-1} = 19 - \frac{1}{\varepsilon} = \frac{19\varepsilon - 1}{\varepsilon}$$

$$AB = \left(\frac{1}{x_2} + x_1^{-1} \right) \left(\frac{1}{x_1} + x_2^{-1} \right) = \frac{1}{x_1 x_2} + x_1^{-1} + x_2^{-1} + x_1^{-1} x_2^{-1} \Rightarrow x_1^{-1} x_2^{-1} = -5\varepsilon$$

$$x_1^{-1} + x_2^{-1} = (x_1 + x_2)^{-1} - 2x_1 x_2 = 1 - (-1) = 2 \Rightarrow AB = \frac{1}{\varepsilon} - 9 - 5\varepsilon = \frac{1-9\varepsilon-5\varepsilon^2}{\varepsilon}$$

$$\left(-5\varepsilon^2 + 10\varepsilon + 1 \right) = \text{مطلوب}$$

$$\sqrt{x} = y \Rightarrow \left(y^2 + \frac{1}{y^2} + 1 \right) (y^2 + 1) = 19y = y^5 + 19y^3 + 19y + \frac{1}{y} = 19y$$

$$y^5 + 19y^3 + 19y + 1 = 19y^5 \Rightarrow y^5 + 19y^3 - 18y^4 + 19y^2 + 1 = 0 \Rightarrow y^5 + \frac{1}{y^5} + 19\left(y + \frac{1}{y}\right) - 18 = 0 \quad (6)$$

$$\frac{1}{y} + y = u \Rightarrow 19u - u^5 = \frac{1}{y^5} + y^5 \Rightarrow u^5 - 19u + 18 = 0 \Rightarrow u^5 - 19u + 18 = 0$$

$$x_1 + x_2 = \frac{a}{r}, \quad x_1 x_2 = \frac{\varepsilon}{r}$$

$$x_1 = r x_2$$

(6)

$$\varepsilon x_2 = \frac{a}{r}, \quad r x_2^2 = \frac{\varepsilon}{r} \Rightarrow x_2^2 = \frac{\varepsilon}{r^2} \Rightarrow x_2 = \frac{r}{r^2}, \quad x_1 = r$$

$$r - \frac{r}{r} = \boxed{\frac{\varepsilon}{r}}$$

$$x = -t \quad y = (-t)^2 a + (-t)(r + ra) = at^2 - rt - rat$$

$$t > 0$$

$$\frac{(ra + r)^2}{\varepsilon a} = y_{\min}$$

$$\propto a > 0 \quad \text{اگر } a > 0$$

$$\propto a = 0 \quad \text{اگر } a = 0$$

$$\propto y \rightarrow -\infty \quad \leftarrow a < 0 \quad \text{اگر } a < 0$$

چون آخر برای هیچ متدا،

$$\frac{-b}{ra} = \text{طول (ی)}$$

$$\frac{r}{r} = -\frac{a}{r} \Rightarrow a = r$$

(7)

$$x^2 + rx - r = 1 \Rightarrow x^2 + rx - r - 1 = 0 \Rightarrow x = \begin{cases} 1 \\ -r \end{cases}$$

$$\Rightarrow b = \varepsilon, \quad \boxed{ab = 1}$$

$$\frac{a}{r} + \frac{a}{ra} = 1$$

$$\frac{a}{r} + \frac{1}{r} = 1 \Rightarrow a = 1$$

(8)

$$\frac{-4}{ra} = \frac{-4}{r} = -r \Rightarrow \frac{b}{r} = -r \Rightarrow b = -4$$

$$\frac{ab}{\varepsilon} = \frac{-4 \times 1}{\varepsilon} = \frac{-4}{\varepsilon}$$

ریشه‌های معادله $Z, P: A = x^2 + 4x + m$ (10)

ریشه‌های معادله $K, P: B = x^2 + rx - r$

$$\left. \begin{aligned} S_A &= P + Z \\ S_B &= K + P \end{aligned} \right\} \Rightarrow S_A - S_B = Z - K$$

$$S_A = -4, \quad S_B = -r \Rightarrow Z - K = -4 - (-4) = \boxed{0}$$