

$$y = a(x-h) + k \rightarrow a(x+1)^2 + 9 \rightarrow 1 = 3(a+1) + 9 \rightarrow 1 = 19a + 9 \rightarrow a = -\frac{1}{9}$$

سؤال ۱! ←

$$y = -\frac{1}{9}(x+1)^2 + 9 = -\frac{1}{9}x^2 - x + \frac{17}{9} \checkmark$$

(۲)

سؤال ۲!  $\Delta > 0 \rightarrow m^2 - 1(m+4) > 0 \rightarrow m^2 - 1m - 4 > 0 \rightarrow (m-1)(m+4) \rightarrow \frac{m}{+4-1+} \rightarrow (-\infty, -4) \cup (1, +\infty)$

$\Delta = 0 \rightarrow \frac{m+4}{2} > 0 \rightarrow m+4 > 0 \rightarrow m > -4$

(۲)

$\Delta < 0 \rightarrow \frac{-m}{2} > 0 \rightarrow m < 0$

انتزاع ۲ شرط  $\rightarrow (-4, -1) \checkmark$

سؤال ۳!  $\frac{-2m+1}{2} = \frac{3}{2-m} \rightarrow 9 = -4m + 2m^2 + 2 - m \rightarrow 2m^2 - 5m - 7 = 0$

(۲)

رابطی  $m^2 - 5m - 14 = 0 \rightarrow (m-7)(m+2) \rightarrow m < \frac{-1 \pm \sqrt{1+56}}{2} \rightarrow m = +\frac{7}{2} \checkmark$

سؤال ۴!  $x^2 - x - 4 = 0 \rightarrow \frac{1}{x_1} + \frac{1}{x_2} = \frac{x_1 + x_2}{x_1 x_2} = \frac{1}{-4} = -\frac{1}{4} \mid x_1^2 + x_2^2 = 1 + 12 = 13$

(۲)

$S = x_1^2 + x_2^2 + \frac{1}{x_1} + \frac{1}{x_2} = -\frac{1}{4} + 13 = 12 \frac{3}{4} = \frac{51}{4}$

$P = (x_1 x_2)^2 + x_1^2 + x_2^2 + \frac{1}{x_1 x_2} = -9 + 9 - \frac{1}{4} = -\frac{1}{4} = -\frac{221}{4}$

$y = x^2 - \frac{51}{4}x - \frac{221}{4} \rightarrow 4x^2 - 51x - 221 \checkmark$

سؤال ۵!  $\sqrt{x^2} = t^2 \quad \sqrt{x} = t \quad (t^2 + \frac{1}{t^2} + 1)(t^2 - 1) = 2t$

← سؤال ۵

$\rightarrow \left( \frac{1+t^2+t^4}{t^2} \right) (t^2-1) = 2t \xrightarrow{\text{اتحاد دینل و فخرجول}} (t^4-1)(t^2+t^2+1) = t^4-1$

(۲)

$\rightarrow 2t = \frac{t^4-1}{t^2} \rightarrow 2t^3 + t = 1 \rightarrow t^4 - 2t^3 - 1 = 0 \quad \frac{t^4}{t^2} \geq 2 - 2 \geq -1$

$\rightarrow z < \left. \begin{matrix} -b+\sqrt{b^2-4ac} \\ -b-\sqrt{b^2-4ac} \end{matrix} \right\} 1 \pm \sqrt{2} \rightarrow y = t^2 = 2 \rightarrow 1 \pm \sqrt{2} \rightarrow x_2 + x_1 = 1 + 1 = 2 \checkmark$

مسئله ۶ -  

$$r^2 x + x = \frac{r}{r} \rightarrow r^2 x = \frac{r}{r} \rightarrow r^2 x = 1 \rightarrow x = \frac{1}{r^2}$$

$$r^2 x + x = \frac{a}{r} \rightarrow r^2 x = \frac{a}{r} \rightarrow (r^2 x)^r = \left(\frac{a}{r}\right)^r \rightarrow \frac{r^2 r^r}{a} = \frac{a^r}{a} \rightarrow a = \pm 1 \rightarrow \boxed{1, 1, 1, 1}$$
(۳) ✓

مسئله ۷ -  

$$\Delta \geq 0 \rightarrow (r+ra)^r \geq 0 \rightarrow \frac{a+ra}{r+ra} \rightarrow [-0.5, \infty)$$

$$\frac{c}{a} = \frac{-b}{a} = \frac{-(r+ra)}{a} = \frac{a+1.5}{-1+1} \rightarrow (1, 0.5, 0)$$
(۲) ✓

چون عرض از مبدأ صفره  $a$  باید مثبت باشد از ضرایب معلوم  
 ندهند:  $a > 0$  (۱) ✓

$(1) \cap (2) = \emptyset$

مسئله ۸ -  

$$\frac{-b}{ra} = 1 = \frac{a}{r} \rightarrow a = r \rightarrow x = x^r + rx \bar{x}^r \rightarrow (x+r)(x-1) \rightarrow x < -r$$
(۲) ✓

$$\left. \begin{array}{l} y_{x=1} \rightarrow -1-r+b = b-r \\ y_{x=-r} \rightarrow -a+r+b = b-r \end{array} \right\} b-r=1 \rightarrow b=r$$

$$\rightarrow a \times b = r \times r = 1 \checkmark$$

$$\frac{-a}{ra} + 1 = \frac{a}{r} \rightarrow \frac{a}{r} = \frac{1}{r} \rightarrow a = 1$$
(۲) ✓

$$(x+0.5)(y+0.5) = xy + 0.5x + 0.5y + 0.25 = -r - \frac{1}{r} + \frac{1}{r} = -r = \frac{b}{r} \rightarrow b = -r$$

$$\left[ \frac{ab}{r} \right] = \left[ \frac{-r}{r} \right] = -1 \checkmark$$

مسئله ۱۰ -  

$$x^r + 4x + m = x^r + 2x - 3m \rightarrow 2x + 4m = 0 \rightarrow x + 2m = 0 \rightarrow x = -2m \rightarrow m = -\frac{x}{2}$$

$$\rightarrow x^r + 4x - x = 0 \rightarrow x^r + 3x = 0 \rightarrow x(x+3) = 0 \rightarrow m = -1.5, \boxed{m \neq 0}$$
(۲) ✓

$$x^r + 4x + 1 = 0 \rightarrow (x+1)(x+1) \rightarrow x < -1$$

$$x^r + 2x - 1 = 0 \rightarrow (x+1)(x-1) \rightarrow x < -1$$

$$\left. \begin{array}{l} x < -1 \\ x < -1 \end{array} \right\} \rightarrow \text{اختلاف غیر صفری} = 3 - (-1) = 4 \checkmark$$