

$$a(x-h)^2+k \quad h=-1 \quad k=9 \quad y=a(x+1)^2+9 \quad \textcircled{20} \quad \textcircled{5} \quad \textcircled{11}$$

$$1=a(1+1)^2+9$$

$$1=16a+9 \rightarrow 16a=-8 \quad a=-\frac{1}{2}$$

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

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

$$\Delta > 0 \rightarrow b^2-4ac > 0 \quad m^2-4(2)(m+6)=m^2-8m-48 > 0$$

$$(m+6)(m-12) > 0 \quad \begin{array}{c} -6 \quad 12 \\ + \quad - \quad + \end{array} \quad m < -6 \quad m > 12 \rightarrow \begin{array}{l} \text{اگر عددی باشد} \\ \text{بزرگتر از 12 یا} \\ \text{کوچتر از -6} \end{array}$$

(1)  $m < -6$  (5)

$$x_1+x_2=\frac{-b}{a}=\frac{-m}{2} > 0 \quad m < 0 \quad (2)$$

$$x_1x_2=\frac{c}{a}=\frac{m+6}{2} > 0 \quad m > -6 \quad (3)$$

$$(1) \cap (2) \cap (3) \rightarrow -6 < m < -4 \quad (-6, -4) \rightarrow \begin{array}{l} \text{اگر عددی باشد} \\ \text{بین -6 و -4} \end{array}$$

$$3x^2+(2m-1)x+2-m=0$$

$$\frac{-2m+1}{3}=\frac{3}{2-m}$$

$$\Delta=25+d^2=11$$

$$S=\frac{2m+1}{3} \quad P=\frac{2-m}{3}$$

$$(-2m+1)(2-m)=9$$

$$m=\frac{5 \pm 9}{2}$$

$$S=\frac{1}{P}$$

$$2m^2-5m+2=9$$

$$2m-5m-7=0$$

$$\boxed{m=\frac{5}{2} / m=-1}$$

$$\Delta \geq 0 \quad (2m-1)^2-4(3)(2-m) \geq 0$$

$$x^2-x-4=0$$

$$y_1+y_2=(x_1^3+x_2^3)+\left(\frac{1}{x_1}+\frac{1}{x_2}\right)=S^3-3SP+\frac{S}{P}=\frac{51}{4}$$

$$x_1+x_2=\frac{-b}{a}=1$$

$$y_1y_2=\left(x_1^3+\frac{1}{x_1}\right)\left(x_2^3+\frac{1}{x_2}\right)=(x_1x_2)^3+x_1^2+x_2^2+\frac{1}{x_1x_2}=P^3+S-\frac{2A}{P}$$

$$=-\frac{221}{4}$$

$$x_1x_2=\frac{c}{a}=-4$$

$$y_1, y_2 \rightarrow \text{ریشه جدید}$$

$$x^2-S'x+P'=x^2-\frac{51}{4}x-\frac{221}{4} \Rightarrow \boxed{x^2-51x-221}$$

$$\sqrt[3]{x}=t \rightarrow (t^3-1)\left(t^3+\frac{1}{t^3}+1\right)=2t \rightarrow t^6-\frac{1}{t^3}=2t \rightarrow t^9-\frac{1}{t^3}-2t=0 \rightarrow t^6-2t^3-1=0$$

$$t^3=m \rightarrow m^2-2m-1=0 \rightarrow m_1, m_2=1 \pm \sqrt{2} \rightarrow t^3=1 \pm \sqrt{2}$$

$$\Delta=4+4=8$$

$$\sqrt[3]{x}=t \Rightarrow t^3=x \Rightarrow x_1, x_2 \Rightarrow \boxed{1+\sqrt{2} \text{ و } 1-\sqrt{2}}$$

کدام عددی

$$3x^2 - ax + 5 = 0$$

$$x_1, x_2 = 3x_1$$

$$x_1 + x_2 = \frac{a}{3} = x_1 + 3x_1 = \frac{a}{3} = 4x_1 \rightarrow a = 12x_1$$

$$x_1 x_2 = \frac{5}{3} = x_1 \times 3x_1 = \frac{5}{3} = 3x_1^2 \rightarrow x_1^2 = \frac{5}{9} \rightarrow x_1 = \pm \frac{\sqrt{5}}{3}$$

$$\begin{cases} x_1 = \frac{\sqrt{5}}{3} \rightarrow a = 12 \times \frac{\sqrt{5}}{3} = 4\sqrt{5} \\ x_2 = -\frac{\sqrt{5}}{3} \rightarrow a = 12 \times (-\frac{\sqrt{5}}{3}) = -4\sqrt{5} \end{cases}$$

$$|1 - (-1)| = |2| = 2 \checkmark$$



$$\textcircled{1} a > 0 \Rightarrow \textcircled{1} \text{ and } \textcircled{2} = \emptyset \rightarrow \text{هیچ مقداری نیست}$$

$$\textcircled{2} \frac{-b}{a} > 0 \Rightarrow \frac{-3-2a}{a} > 0 \Rightarrow \frac{-3}{a} > 0 \Rightarrow (-\frac{3}{a} > 0)$$

$$\textcircled{3} \Delta > 0 \Rightarrow (3+2a)^2 > 0 \rightarrow \text{همواره برقرار}$$

$$y = x^2 + ax - 2 \rightarrow \text{محور تقاطع} = x = \frac{-b}{2a} = \frac{-a}{2}$$

$$y = -x^2 - 2x + b \rightarrow \text{محور تقاطع} \rightarrow x = -1$$

$$-\frac{a}{2} = -1 \quad \frac{a}{2} = 1 \quad a = 2$$

$$\textcircled{1} y = x^2 + ax - 2 \rightarrow y = 1 \rightarrow x^2 + 2x - 2 = 1 \rightarrow x^2 + 2x - 3 = 0 \quad x = \frac{-2 \pm \sqrt{4}}{2} = -3/1$$

$$\textcircled{2} y = -x^2 - 2x + b \rightarrow y = 1 \rightarrow -x^2 - 2x + b = 1 \rightarrow -x^2 - 2x + b - 1 = 0 \rightarrow x^2 + 2x - b + 1 = 0$$

$$\text{محور تقاطع} \rightarrow x = -1 \rightarrow |1 - (-1)| = 2$$

$$|-3 - (-1)| = 2 \rightarrow \text{دورترین فاصله محاسباتی از } x = -1 \text{ دارند}$$

$$x = 1 \rightarrow 1^2 + (2 \times 1) - b + 1 = 0 \rightarrow b = 4$$

$$ab = 2 \times 4 = 8 \checkmark$$

$$2x^2 - ax + b = 0 \rightarrow x_1, x_2 \rightarrow S = \frac{a}{2} \quad P = \frac{b}{2}$$

$$2ax^2 + ax - 4 = 0 \rightarrow y_1, y_2 \rightarrow S = -\frac{1}{2} \quad P = \frac{-4}{a}$$

$$x_1 = y_1 + \frac{1}{2} \quad x_2 = y_2 + \frac{1}{2}$$

$$x_1 + x_2 = y_1 + y_2 + 1 = \frac{a}{2} \rightarrow \frac{1}{2} = \frac{a}{2} \Rightarrow a = 1$$

$$x_1 x_2 = (y_1 + \frac{1}{2})(y_2 + \frac{1}{2}) = y_1 y_2 + \frac{1}{2}(y_1 + y_2) + \frac{1}{4} = -3 - \frac{1}{2} + \frac{1}{4} = -3$$

$$x_1 x_2 = \frac{b}{2} = -3 \rightarrow b = -6$$

$$\left[ \frac{ab}{4} \right] = \left[ \frac{-6}{4} \right] = \left[ \frac{-3}{2} \right] = \boxed{-1.5} \checkmark$$

کتابخانه

$$\frac{1}{r} = r \rightarrow \textcircled{1} r^2 + 4r + m = 0$$

$$\textcircled{2} r^2 + 4r - 3m = 0$$

$$4r + 4m = 0$$

$$m = -r$$

$$r^2 + 4r - r = r^2 + 3r = 0 \quad r \neq 0 \Rightarrow r = -3 \Rightarrow m = 3$$

$$\textcircled{1} \rightarrow S = -4 \rightarrow \text{جمع ریشه ها} \rightarrow \text{ریشه دیگر} = -1$$

$$\textcircled{2} \rightarrow S = -3 \rightarrow \text{جمع ریشه ها} \rightarrow \text{ریشه دیگر} = 3$$

$$|3 - (-1)| = \boxed{4} \checkmark$$

کتابخانه (10)