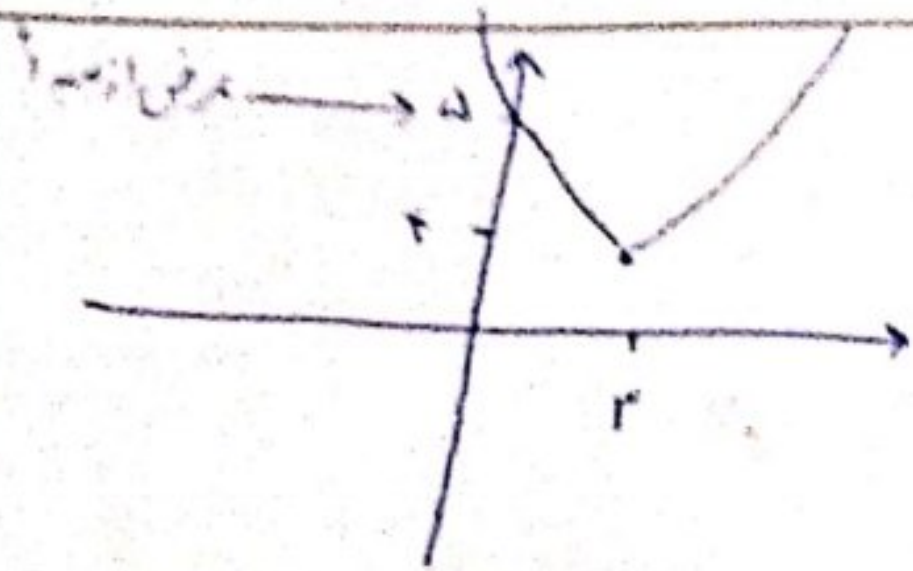


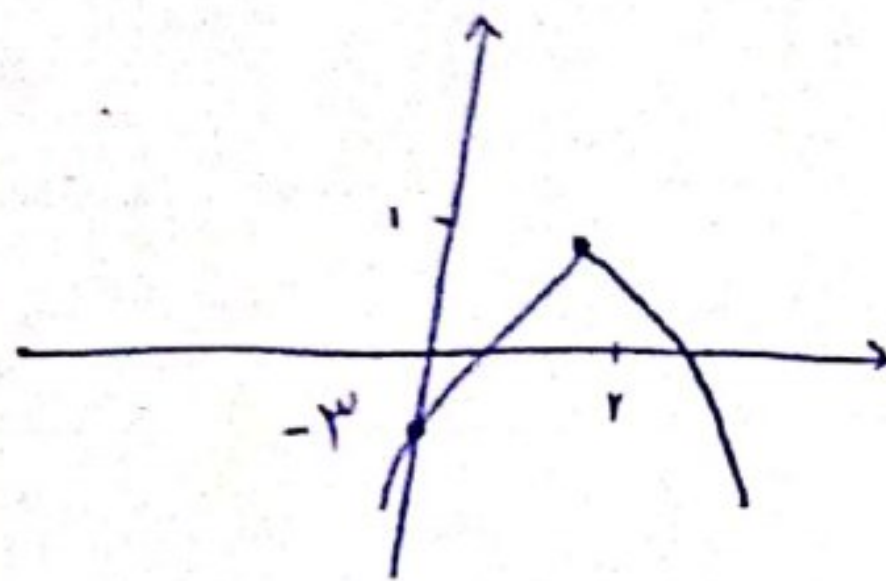


(ب)

$$(min) ext \left| \begin{array}{l} -\frac{b}{2a} = -\frac{4}{2} = -2 \\ \Delta = 9 - 18 + 4 = -4 \end{array} \right| \begin{array}{l} -2 \\ -4 \end{array}$$

برای معادله $x^2 + 4x + 8 = 0$ بجای $x = -2$ می گذاریم

1



(ب)

$$(max) ext \left| \begin{array}{l} -\frac{b}{2a} = -\frac{4}{-2} = 2 \\ \Delta = -2 + 8 - 3 = 3 \end{array} \right| \begin{array}{l} 2 \\ 3 \end{array}$$

برای معادله $x^2 + 4x - 3 = 0$ بجای $x = 2$ می گذاریم

2

$$\Delta = b^2 - 4ac \\ \Delta = 9 - (4 \times 2 \times a) = 9 - 8a > 0 \quad \boxed{a < \frac{9}{8}}$$

(الف) $\Delta > 0$

$$\Delta = b^2 - 4ac \\ \Delta = 9 - (4 \times 2 \times a) = 9 - 8a = 0 \quad 8a = 9 \quad \boxed{a = \frac{9}{8}}$$

(ب) $\Delta = 0$

3

$$\Delta = b^2 - 4ac \\ \Delta = 9 - (4 \times 2 \times a) = 9 - 8a < 0 \quad \boxed{a > \frac{9}{8}}$$

(ج) $\Delta < 0$

$$\Delta = b^2 - 4ac \\ \Delta = 9 - (4 \times 2 \times a) = 9 - 8a \geq 0 \quad \boxed{\frac{9}{8} \geq a}$$

(د) $\Delta \geq 0$

$$x^2 - 2x - 1 = 0 \quad \textcircled{1} x^2 - 2x = 1 \quad \textcircled{2} x^2 - 2x + 1 = 1 + 1 \quad \textcircled{3} (x-1)^2 = 2 \\ \textcircled{4} x-1 = \pm\sqrt{2} \quad \textcircled{5} x = 1 \pm \sqrt{2}$$

(الف)

4

$$x^2 - x - 1 = 0 \quad \textcircled{1} x^2 - x + \frac{1}{4} = 1 + \frac{1}{4} \quad \textcircled{2} x^2 - x + \frac{1}{4} = \frac{5}{4} \quad \textcircled{3} (x - \frac{1}{2})^2 = \frac{5}{4} \\ \textcircled{4} x - \frac{1}{2} = \pm \sqrt{\frac{5}{4}} \quad \textcircled{5} x = \frac{1}{2} \pm \frac{\sqrt{5}}{2} \quad \text{یا} \quad x = \frac{1 \pm \sqrt{5}}{2}$$

(ب)

$$x^2 - 2x - 1 = 0 \quad \textcircled{1} \Delta = b^2 - 4ac \\ \Delta = 4 - (4 \times 1 \times -1) = 8 \\ \textcircled{2} x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{2 \pm \sqrt{8}}{2} = \frac{2 \pm 2\sqrt{2}}{2} \\ \textcircled{3} x = 1 \pm \sqrt{2}$$

5

$$x^2 + x - 4 = 0 \quad \textcircled{1} \Delta = b^2 - 4ac \\ \Delta = 1 - (4 \times 1 \times -4) = 17 \\ \textcircled{2} x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-1 \pm \sqrt{17}}{2}$$

$$x^2 - 11x + 28 = 0$$

$$(x-4)(x-7) = 0$$

$$\boxed{x=4} \quad \boxed{x=7}$$

$$x^2 + 3x - 28 = 0$$

$$(x-4)(x+7) = 0$$

$$\boxed{x=4} \quad \boxed{x=-7}$$

$$2x^2 - 12x + 8 = 0 \quad \text{①} \quad x^2 - 6x + 4 = 0 \rightarrow (x-2)(x-2) = 0$$

$$\boxed{x=2} \quad \boxed{x=2}$$

$$3x^2 - 10x + 4 = 0 \quad x^2 - 10x + 21 = (x-3)(x-7) = 0$$

$$\boxed{x=3} \quad \boxed{x=7}$$

$$2x^2 - 5x + 2 = 0 \quad \text{مجموع ضرایب} = 2 + 5 - 2 = 5 \neq 0$$

$$a+b+c = 0 \Rightarrow \frac{c}{a} = \frac{2}{2} = 1$$

$$2x^2 + 5x + 2 = 0 \Rightarrow x^2 + 2.5x + 1 = 0 \quad (x+2)(x+0.5) = 0$$

$$\boxed{x=-2} \quad \boxed{x=-0.5}$$

$$2x^2 - 5x + 1 = 0 \Rightarrow \Delta = b^2 - 4ac = 25 - 4(2)(1) = 9$$

$$x = \frac{5 \pm \sqrt{9}}{4} = \frac{5 \pm 3}{4}$$

$$4x^2 + 7x + 9 = 0 \Rightarrow \Delta = b^2 - 4ac = 49 - 4(4)(9) = -92$$

$$\Delta < 0 \Rightarrow \text{ریشه حقیقی ندارد}$$

$$x^2 - 3x - 2 = 0 \quad \text{①} \quad \Delta = b^2 - 4ac = 9 - 4(1)(-2) = 17$$

$$x = \frac{3 \pm \sqrt{17}}{2}$$

$$\text{②} \quad x = \frac{3 \pm \sqrt{17}}{2} \Rightarrow \text{جمع ریشه ها} = 3$$

$$S^2 - 2P = 3^2 - 2(2) = 9 - 4 = 5$$

$$S^3 - 3SP = 3^3 - 3(3)(2) = 27 - 18 = 9$$

$$\text{الف) } \binom{7}{2} + \binom{9}{2} = \frac{7!}{2!5!} + \frac{9!}{2!7!} = 21 + 36 = 57$$

$$\text{ب) } \binom{9}{3} - \binom{8}{3} = \frac{9!}{3!6!} - \frac{8!}{3!5!} = 84 - 56 = 28$$