

الف) $y = x^2 + 4x + 5 \rightarrow \text{Min}$ $\frac{-b}{2a} = \frac{-4}{2} = -2$ لول $[-2]$ ۱۴,۷۵

$\frac{-\Delta}{2a} = \rightarrow \Delta = b^2 - 4ac \rightarrow (4)^2 - (4)(5) = 16 - 20 = -4 = \Delta$ ۲

$\frac{-12}{2} = -6$ مض

الف) $y = -x^2 + 4x - 3 \rightarrow \text{Max}$ $\frac{-b}{2a} = \frac{+4}{-2} = -2$ لول ۱,۵

$\frac{-\Delta}{2a} = \rightarrow \Delta = b^2 - 4ac \rightarrow (4)^2 - (4)(-1)(-3) = 16 - 12 = 4 = \Delta$

$\frac{+4}{-2} = -2$ مض

ب) $-x^2 + 4x - 3 < 0 \rightarrow x < 1$ و $x < 3$ نقطه ها را مقادیر می کنند

الف) $2x^2 - 2x + a = 0$

۰ انگشت

الف) $x^2 - 2x - 1 = 0 \rightarrow (x-1)^2$ ۱,۲۵

ب) $(x^2 - x) \neq 0 \rightarrow x^2 - 2x - 2 = 0$

الف) $x^2 - 2x - 1 = 0 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a}$, $\Delta = b^2 - 4ac$

$\rightarrow (-2)^2 - (4)(-1) = 4 + 4 = 8 = \Delta$ ۲

$\frac{(-2) \pm \sqrt{8}}{2} \rightarrow \frac{-2 \pm 2\sqrt{2}}{2} \rightarrow -1 \pm \sqrt{2}$

ب) $x^2 - x - 5 = 0 \rightarrow \Delta = (-1)^2 - (4)(-5) = 1 + 20 = 21 = \Delta$ ۱۷,۷۵

$\rightarrow \frac{(-1) \pm \sqrt{21}}{2} \rightarrow \frac{-1 \pm \sqrt{21}}{2}$

$$\text{الف) } x^2 - 11x + 21 = 0 \rightarrow (x-7)(x-3) = 0$$

$$\boxed{x=7}$$

$$\boxed{x=3}$$

1

$$\text{ب) } x^2 + 3x - 21 = 0 \rightarrow (x-4)(x+7) = 0 \quad x = -7$$

$$x = 4$$

$$\text{الف) } x^2 - 12x + 20 = 0 \rightarrow x^2 - 12x + 20 = 0 \rightarrow (x-4)(x-5) = 0$$

$$x = \frac{20}{4} = 5$$

$$x = \frac{20}{5} = 4$$

2

$$\text{ب) } x^2 - 10x + 21 = 0 \rightarrow (x-7)(x-3) = 0$$

$$x = \frac{21}{7} = 3$$

$$\text{الف) } 2x^2 - 5x + 2 = 0 \rightarrow x = \frac{-(-5) \pm \sqrt{25 - 4(2)(2)}}{2(2)} = \frac{5 \pm \sqrt{1}}{4}$$

$$\Delta = (-5)^2 - (2)(2)(2) = 25 - 12 = 13$$

3

$$\text{ب) } 2x^2 + 5x + 2 = 0$$

$$x = \frac{-5 \pm \sqrt{25 - 4(2)(2)}}{2(2)}$$

$$\Delta = 5^2 - (2)(2)(2) = 25 - 12 = 13$$

$$\text{ج) } 2x^2 - 5x + 1 = 0$$

$$x = \frac{-(-5) \pm \sqrt{25 - 4(2)(1)}}{2(2)}$$

$$\Delta = (-5)^2 - (2)(1)(1) = 25 - 4 = 21$$

$$\text{د) } 2x^2 + 7x + 3 = 0$$

$$x = \frac{-7 \pm \sqrt{49 - 4(2)(3)}}{2(2)}$$

$$\Delta = 7^2 - (2)(3)(3) = 49 - 18 = 31$$

$$\text{الف) } S^2 - 2P = 7$$

$$S = \frac{-b}{a}$$

$$x^2 - 2x - 7 = 0$$

$$P = \frac{c}{a}$$

$$\Delta = (-2)^2 - (1)(-7) = 4 + 7 = 11$$

4

$$\frac{(-2) \pm \sqrt{11}}{2} \rightarrow (2) - 2x = \frac{7}{1} = 7 \rightarrow \frac{7}{1} = 7 \rightarrow 7 = 7$$

$$\text{ب) } S^3 - 3SP = 7$$

$$(3)^3 - (3)(3)(7) = 27 - 63 = -36$$

$$\text{الف) } \binom{7}{5} + \binom{9}{2} = \frac{7!}{5!(2)!} + \frac{9!}{2!(7)!} = \frac{7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{5 \times 4 \times 3 \times 2 \times 1 \times 2} + \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{2 \times 1 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}$$

$$= \frac{7 \times 6 \times 4 \times 3}{2} + \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2}{2 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2} = 21 + 36 = 57$$

5

$$\text{ب) } \binom{9}{3} - \binom{11}{2} = \frac{9!}{3!(6)!} - \frac{11!}{2!(9)!} = \frac{9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{3 \times 2 \times 1 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1} - \frac{11 \times 10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{2 \times 1 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}$$

$$= \frac{9 \times 8 \times 7}{6} - \frac{11 \times 10}{2} = 126 - 55 = 71$$