

الف) $y = (-2)^2 + (-4)(-2) + 2 = -4$
چون مثبت است min است

ب) $\min \left| \frac{-b}{2a} = -2 \right|$
 $\min \left| \frac{-4}{-4} = -1 \right|$

ext $\left| \frac{-b}{2a} \right|$ جانبی

الف) $\max \left| \frac{-b}{2a} = 1 \right|$

ب) در نقاط ۰ و ۱ قطع می‌کند

برای اینکه بفهمیم معنی در دو نقطه ۰ و ۱ قطع می‌کند یا نه، باید از مساوی معز قرار دهیم

$0 = -x^2 + 4x - 4 \Rightarrow x = 1$

الف) $a = 1$ $\Rightarrow x = \frac{1}{2}$ $\Rightarrow 2x^2 - 4x + 1 = 0$ ضرب در ۲

ب) $a = \frac{9}{8}$ $\Rightarrow \Delta = b^2 - 4ac = 16 - 4 \cdot \frac{9}{8} \cdot 1 = 16 - 4.5 = 11.5$

ج) $\Delta = b^2 - 4ac = 16 - 4 \cdot 1 \cdot c = 0 \Rightarrow c = 4$

د) $2x^2 - 4x + a = 0 \Rightarrow a \in \mathbb{R}, a \leq 1$

الف) $x = \frac{1}{2}$ $\Rightarrow x^2 - 2x + 1 = 0 \Rightarrow (x-1)^2 = 0 \Rightarrow x = 1$

ب) $x^2 - x - 1 = 0 \Rightarrow x = \frac{1 \pm \sqrt{5}}{2}$

ج) $x = \frac{1}{2}$ $\Rightarrow x^2 - x - 1 = 0 \Rightarrow x = \frac{1 \pm \sqrt{5}}{2}$

الف) $\Delta = b^2 - 4ac = 16 - 4 \cdot 1 \cdot 1 = 12$ $y = \frac{-2 \pm \sqrt{12}}{2} = -1 \pm \sqrt{3}$

ب) $\Delta = 1 - 4(1 - 4) = 1 + 15 = 16$ $y = \frac{-1 \pm \sqrt{16}}{2} = \frac{-1 \pm 4}{2}$

$$x^2 - 11x + 18 = 0 \Rightarrow (x-6)(x-3) = 0 \Rightarrow \begin{matrix} x=6 \\ x=3 \end{matrix}$$

(الف)

$$x^2 + 2x - 15 = 0 \Rightarrow (x+5)(x-3) = 0 \Rightarrow \begin{matrix} x=-5 \\ x=3 \end{matrix}$$

(ب)

$$x^2 - 12x + 1 = 0 \Rightarrow x^2 - 12x + 36 = 0 \Rightarrow (x-6)(x-6) = 0$$

(الف)

$$\Rightarrow x = \frac{12}{2} = 6, x = \frac{1}{2} = 0.5$$

$$x^2 - 10x + 1 = 0 \Rightarrow x^2 - 10x + 25 = 0 \Rightarrow (x-5)(x-5) = 0$$

(ب)

$$\Rightarrow x = \frac{10}{2} = 5, x = \frac{1}{2} = 0.5$$

$$x^2 - 2x + 1 = 0 \Rightarrow x^2 - 2x + 1 = 0 \Rightarrow (x-1)(x-1) = 0 \Rightarrow \begin{matrix} x=1 \\ x=1 \end{matrix}$$

(الف)

$$x^2 + 2x + 1 = 0 \Rightarrow x^2 + 2x + 1 = 0 \Rightarrow (x+1)(x+1) = 0 \Rightarrow \begin{matrix} x=-1 \\ x=-1 \end{matrix}$$

(ب)

$$x^2 - 2x + 1 = 0 \Rightarrow \Delta = 4 - 4 \times 1 \times 1 = 0 \quad y = \frac{2 \pm \sqrt{0}}{2} = \frac{2}{2} = 1$$

(ج)

$$x^2 + 2x + 1 = 0 \Rightarrow x^2 + 2x + 1 = 0 \Rightarrow (x+1)(x+1) = 0 \Rightarrow \begin{matrix} x=-1 \\ x=-1 \end{matrix}$$

(د)

$$x^2 - 2x - 1 = 0$$

$$\left(\frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(-1)}}{2(1)} \right) = \frac{2 \pm \sqrt{4+4}}{2} = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$$

(الف)

$$\left(\frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(-1)}}{2(1)} \right) = \frac{2 \pm \sqrt{4+4}}{2} = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$$

(ب)

$$\binom{9}{2} + \binom{9}{1} = \frac{9!}{(9-2)!2!} + \frac{9!}{(9-1)!1!} = \frac{9 \times 8 \times 7!}{2 \times 7!} + \frac{9 \times 8 \times 7!}{1 \times 7!} = 36 + 72 = 108$$

(الف)

$$\binom{9}{2} - \binom{9}{1} = \frac{9!}{(9-2)!2!} - \frac{9!}{(9-1)!1!} = \frac{9 \times 8 \times 7!}{2 \times 7!} - \frac{9 \times 8 \times 7!}{1 \times 7!} = 36 - 72 = -36$$

(ب)