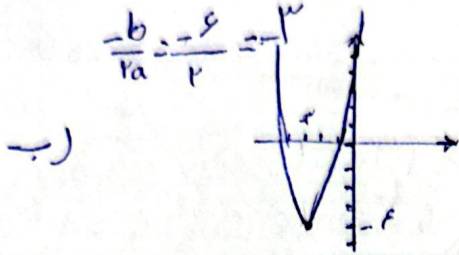


الف) $\text{ext} \left| \frac{-b}{2a} \rightarrow \min \right| \frac{-3}{-4} \quad y = 4 + (-1) + 1 \rightarrow y = -4$



الف) $\text{ext} \left| \frac{-b}{2a} \rightarrow \max \right| \frac{1}{-4} \quad y = -4 + 1 - 3 = -6$
 $\frac{-b}{2a} = \frac{-1}{-4} = \frac{1}{4}$



ب) $0 = -x^2 + 4x - 3$
 $x^2 - 4x + 3 = 0 \rightarrow (x-3)(x-1) = 0$
 $x \rightarrow 1 \text{ و } 3$
 محور x ها را در نقاط ۱ و ۳ قطع کند

الف) $\Delta > 0 \quad 4 - 1a > 0 \rightarrow -1a > -4 \rightarrow 1a < 4 \rightarrow a < \frac{4}{1}$
 $\Delta = b^2 - 4ac = 4 - (4 \times 1 \times a) = 4 - 1a$
 ب) $\Delta = 0 \quad 4 - 1a = 0 \rightarrow -1a = -4 \rightarrow 1a = 4 \rightarrow a = \frac{4}{1}$
 ج) $\Delta < 0 \quad \frac{4-1a}{4} < 0 \rightarrow 4 - 1a < 0 \rightarrow -1a < -4 \rightarrow 1a > 4 \rightarrow a > \frac{4}{1}$
 د) $\Delta \geq 0 \quad 4 - 1a \geq 0 \rightarrow -1a \geq -4 \rightarrow 1a \leq 4 \rightarrow a \leq \frac{4}{1}$

الف) $x^2 - 2x - 1 = 0 \rightarrow x^2 - 2x + 1 = 2 \rightarrow (x-1)^2 = 2 \rightarrow \sqrt{(x-1)^2} = \sqrt{2} \rightarrow x-1 = \pm\sqrt{2} \rightarrow x-1 \pm \sqrt{2} = 0$
 ریشه ها $\rightarrow 1 + \sqrt{2}$
 $\rightarrow 1 - \sqrt{2}$
 ب) $x^2 - 2x - 1 = 0 \rightarrow x^2 - 2x + 1 = 2 - 2 \rightarrow (x-1)^2 = 2 - 2 \rightarrow x-1 = \pm\sqrt{2-2} \rightarrow x-1 \pm \sqrt{0} = 0$
 ریشه ها $\rightarrow 1 + \sqrt{2-2}$
 $\rightarrow 1 - \sqrt{2-2}$

الف) $x^2 - 2x - 1 = 0 \quad \Delta = b^2 - 4ac = 4 - (4 \times 1 \times -1) = 4 + 4 = 8$
 $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{2 \pm \sqrt{8}}{2} = \frac{2 \pm 2\sqrt{2}}{2} = \frac{2(1 \pm \sqrt{2})}{2} = 1 \pm \sqrt{2}$
 ب) $x^2 + x - 1 = 0 \quad \Delta = b^2 - 4ac = 1 - (4 \times 1 \times -1) = 1 + 4 = 5$
 $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{5}}{2} = \frac{-1 \pm \sqrt{5}}{2}$

$$\text{الف) } x^2 - 11x + 18 = 0 \rightarrow (x-2)(x-9) = 0 \rightarrow \begin{cases} x-2=0 \rightarrow x=2 \\ x-9=0 \rightarrow x=9 \end{cases}$$

$$\text{ب) } x^2 + 3x - 18 = 0 \rightarrow (x+6)(x-3) = 0 \rightarrow \begin{cases} x+6=0 \rightarrow x=-6 \\ x-3=0 \rightarrow x=3 \end{cases}$$

$$\text{الف) } \omega x^2 - 11x + 18 = 0 \rightarrow x^2 - 11x + 18 = 0 \rightarrow (x-2)(x-9) = 0 \rightarrow \begin{cases} x=2 \\ x=9 \end{cases}$$

$\omega \div \omega = 1$

$$\text{ب) } 3x^2 - 10x + 6 = 0 \rightarrow x^2 - 10x + 21 = 0 \rightarrow (x-3)(x-7) = 0 \rightarrow \begin{cases} x=3 \\ x=7 \end{cases}$$

$3 \div 3 = 1$

$$\text{الف) } 2x^2 - 5x + 3 = 0 \rightarrow x^2 - 5x + 3 = 0 \rightarrow (x-2)(x-3) = 0 \rightarrow \begin{cases} x=2 \\ x=3 \end{cases}$$

$2 \div 2 = 1$

$$\text{ب) } 2x^2 + 5x + 3 = 0 \rightarrow x^2 + 5x + 3 = 0 \rightarrow (x+2)(x+3) = 0 \rightarrow \begin{cases} x=-2 \\ x=-3 \end{cases}$$

$2 \div 2 = 1$

$$\text{ج) } 2x^2 - 5x + 12 = 0 \rightarrow \Delta = b^2 - 4ac = 25 - 4(2)(12) = 25 - 96 = -71$$

$\Delta < 0$ پس هیچ جوابی ندارد

$$\text{الف) } \left. \begin{aligned} S &= -\frac{b}{a} = \frac{5}{1} = 5 \\ P &= \frac{c}{a} = \frac{3}{1} = 3 \end{aligned} \right\} \rightarrow S^2 - 2P = 5^2 - 2(3) = 25 - 6 = 19$$

$$\text{ب) } \left. \begin{aligned} S &= 5 \\ P &= -3 \end{aligned} \right\} \rightarrow S^2 - 2SP = 5^2 - 2(5)(-3) = 25 + 30 = 55$$

$$\text{الف) } \frac{V \times V}{1 \times 1!} + \frac{9 \times 1}{1! \times 1!} = \frac{V \times V}{1 \times 1} + \frac{9 \times 1}{1 \times 1} = 11 + 9 = 20$$

$$\text{ب) } \frac{9 \times 1 \times V}{1! \times 1!} - \frac{1 \times V}{1! \times 1!} = \frac{9 \times 1 \times V}{1 \times 1} - \frac{1 \times V}{1 \times 1} = 8V - 1V = 7V$$