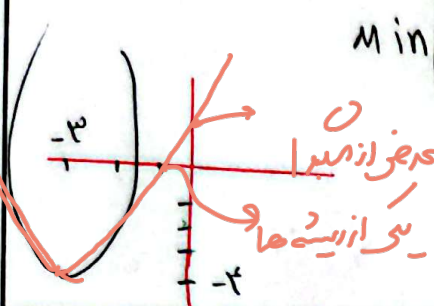
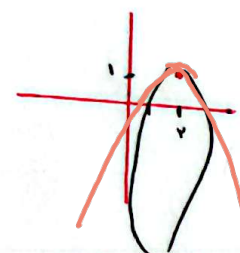


الف: $y = x^2 + 2x + 5$ ext $-\frac{b}{2a} = -\frac{2}{2} = -1$ ✓
 min $\frac{-\Delta}{4a} = \frac{-4+16}{4} = 3$ ✓
 ب:  $\Delta = 2^2 - 4 \cdot 1 \cdot 5 = -16 < 0$ ✓
 روی لوله خمدار طاراً دقیق تدبیر

الف: $y = -x^2 + 2x - 3$ ext $-\frac{b}{2a} = \frac{-2}{-2} = 1$ ✓
 max $\frac{-\Delta}{4a} = \frac{-4-12}{-4} = 2$ ✓
 ب:  $\Delta = 2^2 - 4 \cdot (-1) \cdot (-3) = -8 < 0$ ✓
 ریشه یابی روش جمع ضرایب
 $x = 1$ ✓
 $x = \frac{c}{a} = 3$ ✓

الف: $\Delta > 0 \Rightarrow \Delta = b^2 - 4ac \Rightarrow -4 - 4(1)(a) > 0 \Rightarrow 9 > 11a \Rightarrow a < \frac{9}{11}$ ✓
 $\frac{9}{11} > a = \boxed{a < \frac{9}{11}}$ $\Delta = 0 \Rightarrow \Delta = 0 \Rightarrow 9 + 11a = 0 \Rightarrow a = -\frac{9}{11}$ ✓
 $a = -\frac{9}{11}$ $\Delta < 0 \Rightarrow 9 + 11a < 0 \Rightarrow 9 < -11a \Rightarrow -\frac{9}{11} < a$ ✓
 $a > -\frac{9}{11}$ $\Delta \geq 0 \Rightarrow 9 + 11a \geq 0 \Rightarrow 9 \geq -11a \Rightarrow a \geq -\frac{9}{11}$ ✓

الف: $x^2 - 2x - 1 = 0 \Rightarrow x^2 - 2x = 1 \Rightarrow x^2 - 2x + \left(\frac{-2}{2}\right)^2 = 1 + (-1)^2 \Rightarrow (x-1)^2 = 2$ ✓
 $x = 1 + \sqrt{2}$ $x = 1 - \sqrt{2}$ ✓

ب: $x^2 - x - 1 = 0 \Rightarrow x^2 - x = 1 \Rightarrow x^2 - x + \left(\frac{-1}{2}\right)^2 = 1 + \left(\frac{1}{4}\right) \Rightarrow \left(x - \frac{1}{2}\right)^2 = \frac{5}{4}$ ✓
 $\left(x - \frac{1}{2}\right)^2 = \frac{5}{4} \Rightarrow x - \frac{1}{2} = \pm \sqrt{\frac{5}{4}}$ $x = \frac{1 + \sqrt{5}}{2}$ $x = \frac{1 - \sqrt{5}}{2}$ ✓

الف: $x^2 - 2x - 1 = 0 \Rightarrow \Delta = b^2 - 4ac = 4 + 4 = 8 \Rightarrow x = \frac{2 \pm \sqrt{8}}{2} = 1 \pm \sqrt{2}$ ✓
 $x = 1 + \sqrt{2}$ ✓
 $x = 1 - \sqrt{2}$ ✓

ب: $x^2 - x - 2 = 0 \Rightarrow \Delta = b^2 - 4ac = 1 + 8 = 9 \Rightarrow x = \frac{1 \pm \sqrt{9}}{2} = \frac{1 \pm 3}{2}$ ✓
 $x = \frac{1 + 3}{2} = 2$ ✓
 $x = \frac{1 - 3}{2} = -1$ ✓

$$x^2 - 11x + 21 = 0 \Rightarrow (x-4)(x-7) \Rightarrow x=4 \quad x=7$$

الف:

2

$$x + 3x - 41 = 0 \Rightarrow (x-4)(x+7) \Rightarrow x=4 \quad x=-7$$

ب:

6

$$\omega x^2 - 12x + 7 = 0 \Rightarrow x^2 - 12x + 3\omega = (x-7)(x-\omega) \Rightarrow x=7 \Rightarrow x=\frac{7}{\omega} \Rightarrow x=\frac{\omega}{\omega}=1$$

7

$$3x^2 - 10x + 7 = 0 \Rightarrow x^2 - 10x + 11 = (x-7)(x-4) \Rightarrow x=7 \Rightarrow x=\frac{7}{3} \Rightarrow x=\frac{3}{3}=1$$

ب:

2

$$\text{الف)} 2x^2 - \omega + 3 = 0 \quad x=1 \quad x=\frac{c}{a} = \frac{3}{2}$$

$$\text{ب)} 3x^2 + \omega x + 11 = 0 \Rightarrow x^2 + \omega x + 7 = 0 \Rightarrow (x+3)(x+4) \quad x=-3 \Rightarrow x=-1 \quad x=-4 \Rightarrow x=-\frac{11}{4}$$

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$$\text{ج)} 2x^2 - \omega x + 1 = 0 \Rightarrow 2\omega - 1 = 1 \quad x = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow \frac{\omega \pm \sqrt{17}}{2}$$

$$\text{د)} 4x^2 + 7x + 9 = 0 \Rightarrow 49 - 14^2 = -9\omega \quad x = \frac{-7 \pm \sqrt{49}}{8} = \dots$$

$$x^2 - 3x - 2 = 0 \Rightarrow 9 - 1 = 1 - x = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow \frac{3 \pm \sqrt{17}}{2} \quad x=2 \quad x=1$$

$$s = 1 + 2 = 3$$

$$p = 1x^2 = 2 \rightarrow p = \frac{c}{a} = -2$$

$$\text{الف)} 9 - 4 = \omega \rightarrow 4 + 4 = 13$$

$$\text{ب)} 27 - 11 = 9 \quad 27 + 11 = 38$$

$$\text{الف)} \binom{7}{\omega} + \binom{9}{2} = \frac{7!}{(\omega-1)! \omega!} = 21 + \frac{9!}{(9-2)! 2!} = 21 \Rightarrow 21\omega + 11 = \omega 21$$

$$\text{ب)} \binom{9}{3} - \binom{1}{2} = \frac{9!}{(9-3)! 3!} = 84 - \frac{1!}{(1-2)! 2!} = 21 = 14 - 11 = \omega 21$$

1,0