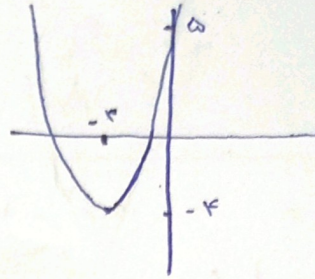


$$\text{ext} \left| \begin{array}{l} -\frac{b}{2a} = -\frac{4}{2} = -2 \\ -4 \end{array} \right. \quad \text{Min}$$

$$y = x^2 + 4x + 5$$

$$y = 9 - 18 + 5 = -4$$

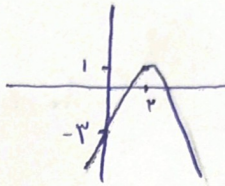


(الف)

(ب)

$$\text{ext} \left| \begin{array}{l} -\frac{b}{2a} = -\frac{4}{-2} = 2 \\ 1 \end{array} \right. \quad \text{Max}$$

$$y = -x^2 + 4x - 3 = -4 + 16 - 3 = 9$$



(الف)

(ب)

$$\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-4 \pm \sqrt{16 - 12}}{-2} = 1 \quad \frac{-4 - \sqrt{4}}{-2} = 3$$

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

$$\Delta = 0 \quad \Delta = 9 - 8a \quad 9 - 8a = 0 \quad \boxed{a = \frac{9}{8}} \quad \text{(ب)}$$

$$\Delta < 0 \quad \Delta = 9 - 8a \quad 9 - 8a < 0 \quad \boxed{a > \frac{9}{8}} \quad \text{(ج)}$$

$$\Delta \geq 0 \quad \Delta = 9 - 8a \quad 9 - 8a \geq 0 \quad \boxed{a \leq \frac{9}{8}} \quad \text{(د)}$$

$$\text{الف) } x^2 - 2x - 1 = 0 \quad (x - 1)^2 = 2 \quad x - 1 = \pm \sqrt{2} \quad \underline{x = 1 \pm \sqrt{2}}$$

$$\text{ب) } x^2 - x - 1 = 0 \quad (x - \frac{1}{2})^2 = \frac{5}{4} \quad x - \frac{1}{2} = \pm \sqrt{\frac{5}{4}} \quad \underline{x = \frac{1}{2} \pm \sqrt{\frac{5}{4}}}$$

$$\Delta = b^2 - 4ac$$

$$\text{الف) } x^2 - 2x - 1 = 0 \quad \Delta = 4 + 4 = 8 \quad \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{2 \pm \sqrt{8}}{2}$$

$$\text{ب) } x^2 + x - 4 = 0 \quad \Delta = 1 + 16 = 17 \quad \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{17}}{2}$$

$$a) x^2 - 11x + 18 = 0$$

$$(x-4)(x-5) = 0$$

$$\underline{x=4}$$

$$\underline{x=5}$$

$$b) x^2 + 3x - 18$$

$$(x+6)(x-3) = 0$$

$$\underline{x=-6}$$

$$\underline{x=3}$$

$$a) \omega x^2 - 12x + 5 = 0$$

$$x^2 - 12x + 5 = 0 \quad (x-5)(x-1) = 0$$

$$\underline{x = \frac{5}{\omega}} \quad \underline{x = \frac{1}{\omega}}$$

$$b) 3x^2 - 10x + 5 = 0$$

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

$$\underline{x = \frac{5}{3}} \quad \underline{x = \frac{1}{3}}$$

$$a) 2x^2 - \omega x + 3 = 0$$

$$2x^2 - \omega x + 3 = 0$$

$$\underline{x=1} \quad \underline{x = \frac{3}{\omega}} \quad \text{جميع ضلوع}$$

$$b) 2x^2 + \omega x + 3 = 0$$

$$x+3 = \omega$$

$$a+c = b$$

$$\underline{x=-1} \quad \underline{x = -\frac{3}{\omega}} \quad \text{جميع ضلوع}$$

$$c) 2x^2 - \omega x + 1 = 0$$

$$\Delta = b^2 - 4ac = \omega^2 - 4 = 16$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{\omega \pm 4}{2}$$

$$d) 5x^2 + 12x + 9 = 0$$

$$\Delta = b^2 - 4ac = 144 - 180 = -36$$

$$\Delta < 0 \quad \text{لا يوجد حلا}$$

$$x^2 - 3x - 4 = 0$$

$$S = \frac{-b}{a} = \frac{3}{1} = 3$$

$$P = \frac{c}{a} = \frac{-4}{1} = -4$$

$$a) S^2 - 3P = 9 - 3(-4) = 9 + 12 = 21$$

$$b) S^2 - 3SP = 9 - 3 \times 3 \times (-4) = 9 + 36 = 45$$

$$a) \begin{pmatrix} 5 \\ \omega \end{pmatrix} + \begin{pmatrix} 9 \\ \gamma \end{pmatrix} = \frac{5 \times \gamma + \omega \times 9}{1 \times \gamma + \omega \times \omega} = 21$$

$$\frac{5 \times \gamma}{1 \times \gamma} = 5 \quad \boxed{21 + 36 = 57}$$

$$b) \begin{pmatrix} 9 \\ \gamma \end{pmatrix} - \begin{pmatrix} 5 \\ \omega \end{pmatrix} = \frac{9 \times \omega - 5 \times \gamma}{\gamma \times \omega} = 18 - 21 = -3$$