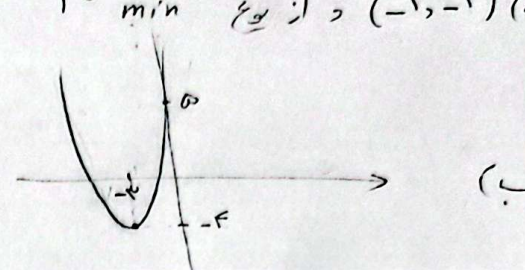


$y = x^2 + 4x + 5 \rightarrow a > 0 \rightarrow \min$ | $\frac{-b}{2a} \rightarrow \frac{-4}{2} = -2$
 $\xrightarrow{\text{عرض سب}} x=0 \quad y=5$ | $y \rightarrow -4$
 الف) $(-2, -4)$ و از نوع $\min$
 $y = 39 - 34 + 5 = 10$

 ب)

$y = -x^2 + 4x - 3 \rightarrow a < 0 \rightarrow \max$ | $\frac{-b}{2a} \rightarrow \frac{-4}{-2} = 2$
 $\xrightarrow{\text{عرض سب}} x=0 \quad y=-3$ | $y \rightarrow 1$
 الف) $(2, 1)$
 ب) $(1, 0), (3, 0)$ نقاط
 محور x قطع
 $y=0 \Rightarrow -x^2 + 4x - 3 = 0$
 $-(x^2 - 4x + 3) = 0$
 $-(x-1)(x-3) = 0$

$2x^2 - 3x + a = 0 \Rightarrow x^2 - \frac{3}{2}x + \frac{a}{2} = 0$ | $\Delta > 0 \rightarrow 9 - 1a > 0 \rightarrow -1a > -9$ الف)
 $\rightarrow 1a < 9 \rightarrow a < \frac{9}{1}$ ب)
 $b^2 - 4ac = 1 \quad \Delta = 0 \rightarrow 9 - 1a = 0 \rightarrow 1a = 9 \rightarrow a = \frac{9}{1}$ ج)
 $\Delta < 0 \rightarrow 9 - 1a < 0 \rightarrow -1a < -9 \rightarrow 1a > 9 \rightarrow a > \frac{9}{1}$ د)
 $\Delta \geq 0 \rightarrow 9 - 1a \geq 0 \rightarrow 1a \leq 9 \rightarrow a \leq \frac{9}{1}$

الف) $x^2 - 2x - 1 = 0 \xrightarrow{+2} x^2 - 2x + 1 = 2 \Rightarrow (x-1)^2 = 2 \Rightarrow x-1 = \pm \sqrt{2}$
 $x_1 = \sqrt{2} + 1$
 $x_2 = -\sqrt{2} + 1$
 ب) $x^2 - x - 1 = 0 \xrightarrow{+\frac{1}{4}} x^2 - x + \frac{1}{4} = \frac{5}{4} \Rightarrow (x - \frac{1}{2})^2 = \frac{5}{4}$
 $x - \frac{1}{2} = \pm \sqrt{\frac{5}{4}} \Rightarrow x_1 = \frac{1}{2} - \sqrt{\frac{5}{4}}, x_2 = \frac{1}{2} + \sqrt{\frac{5}{4}}$

الف) $x^2 - x - 1 = 0 \quad \Delta = b^2 - 4ac = 1 + 4 = 5 \quad x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{1 \pm \sqrt{5}}{2}$
 $\frac{1 \pm \sqrt{5}}{2} \rightarrow \frac{1 + \sqrt{5}}{2} = x_1, \frac{1 - \sqrt{5}}{2} = x_2$
 ب) $x^2 + x - 4 = 0 \quad \Delta = b^2 - 4ac = 1 + 16 = 17 \quad x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{17}}{2}$

$$\text{الف) } x^2 - 11x + 28 = 0 \quad (x-4)(x-7) = 0 \quad x=4, x=7$$

$$\text{ب) } x^2 + 3x - 28 = 0 \quad (x+7)(x-4) = 0 \quad x=-7, x=4$$

$$\text{الف) } 5x^2 - 12x + 7 = 0 \Rightarrow x^2 - 12x + 35 = 0 = (x-5)(x-7) = 0$$

$$x=5, x=7$$

$$\Rightarrow x = \frac{5}{5} = 1, x = \frac{7}{5}$$

$$\text{ب) } 4x^2 - 10x + 7 = 0 \Rightarrow x^2 - 10x + 21 = 0 = (x-3)(x-7) = 0$$

$$x=3, x=7$$

$$\Rightarrow x = \frac{3}{4}, x = \frac{7}{4}$$

$$\text{الف) } 2x^2 - 5x + 3 = 0 \Rightarrow x^2 - 5x + 4 = 0 = (x-3)(x-2) = 0$$

$$x=3, x=2 \Rightarrow x = \frac{3}{2}, x = \frac{2}{2} = 1$$

$$\text{ب) } 2x^2 + 5x + 3 = 0 \Rightarrow a+c = b \rightarrow -1 = x$$

$$\text{ج) } 2x^2 - 5x + 1 = 0 \Rightarrow \Delta = 25 - 4 = 17$$

$$x = \frac{+5 \pm \sqrt{17}}{4}$$

$$\text{د) } 4x^2 + 7x + 9 = 0 \Rightarrow \Delta = 49 - (4 \times 4 \times 9) = -95$$

$$\Delta < 0 \Rightarrow \text{جواب ندارد}$$

$$x^2 - 3x - 2 = 0 \quad S = -\frac{-3}{1} = 3 \quad P = \frac{-2}{1} = -2$$

$$S = -\frac{c}{a} \quad P = \frac{c}{a}$$

$$\text{الف) } S^2 - 2P = 9 + 4 = 13$$

$$\text{ب) } S^2 - 3SP = 27 - 18 = 9$$

$$\text{الف) } \binom{7}{5} + \binom{9}{7} = \frac{7 \times 6}{1 \times 2} + \frac{9 \times 8}{1 \times 2} = 21 + 36 = 57$$

$$\text{ب) } \binom{9}{3} - \binom{11}{2} = \frac{9 \times 8 \times 7}{1 \times 2 \times 3} - \frac{11 \times 10}{1 \times 2} = 84 - 55 = 29$$