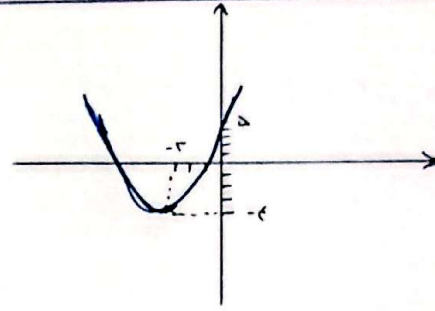


$$y = x^2 + 4x + 2$$

$$\Delta = 3^2 - 4 \cdot 2 = 1$$

$$\text{Min} \begin{cases} \frac{-b}{2a} & \frac{-4}{2} = -2 \\ \frac{-\Delta}{4a} & \frac{-1}{4} = -\frac{1}{4} \end{cases}$$

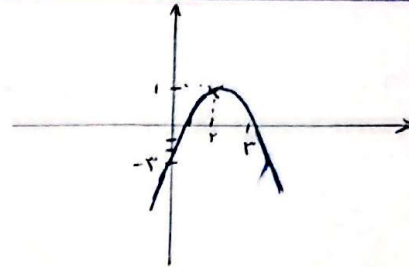


$$\left[\begin{matrix} -2 \\ -\frac{1}{4} \end{matrix} \right] \text{ الف } (1)$$

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

$$\Delta = 16 - 20 = -4$$

$$\text{Max} \begin{cases} \frac{-b}{2a} & \frac{-4}{-2} = 2 \\ \frac{-\Delta}{4a} & \frac{-(-4)}{-4} = -1 \end{cases}$$



$$\left[\begin{matrix} 2 \\ -1 \end{matrix} \right] \text{ الف } (2)$$

$$\left[\begin{matrix} 2 \\ -1 \end{matrix} \right], \left[\begin{matrix} 1 \\ 0 \end{matrix} \right] \text{ الف } (3)$$

$$2x^2 - 3x + a = 0$$

$$a \geq \frac{9}{8} \quad (1) \quad a > \frac{9}{8} \quad (2) \quad a = \frac{9}{8} \quad (3) \quad a < \frac{9}{8} \quad \text{الف } (4)$$

$$\Delta = 9 - 8a$$

$$\text{الف } (1) \quad 2x^2 - 3x - 1 = 0 \rightarrow x^2 - 2x + 1 = 2 \quad (x-1)^2 = 2 \quad \pm\sqrt{x-1} = \sqrt{2} \quad \begin{cases} x = 1 - \sqrt{2} \\ x = 1 + \sqrt{2} \end{cases} \quad (4)$$

$$\text{ب } (2) \quad 2x^2 - 3x - 1 = 0 \rightarrow x^2 - 2x + 1 = 2 \quad (x-1)^2 = 2 \quad x = \begin{cases} 1 + \sqrt{2} + x \\ 1 - \sqrt{2} + x \end{cases}$$

$$\text{الف } (3) \quad 2x^2 - 3x - 1 = 0 \quad \Delta = 9 - (-4) = 13 \quad x = \frac{3 \pm \sqrt{13}}{2} \quad \begin{cases} 1 + \sqrt{13} \\ 1 - \sqrt{13} \end{cases} \quad (5)$$

$$\text{ب } (4) \quad 2x^2 - 3x - 1 = 0 \quad \Delta = 9 - (-4) = 13 \quad x = \frac{-1 \pm \sqrt{13}}{2}$$

$$\text{الف } (5) \quad 2x^2 - 11x + 28 = 0 \quad (x-7)(x-4) \rightarrow x=7, x=4 \quad (6)$$

$$\text{ب } (6) \quad 2x^2 + 3x - 28 = 0 \quad (x+7)(x-4) \rightarrow x=-7, x=4$$

$$\text{الف } (7) \quad 2x^2 - 11x + 7 = 0 \quad x^2 - 12x + 21 = 0 \quad (x-7)(x-3) \quad x = \frac{7}{3} \quad (7)$$

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

$$\text{ب } (8) \quad 2x^2 - 10x + 7 = 0 \quad x^2 - 10x + 21 = 0 \quad (x-7)(x-3) \quad x = \frac{7}{3} \quad (8)$$

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

$$\text{الف) } 2x^2 - 5x + 3 = 0 \quad a+b+c=0 \quad x=1 \quad 2-5+3=0 \quad x=1$$

$$x = \frac{c}{a} \quad x = \frac{3}{1}$$

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

$$x = \frac{-c}{a} \quad x = \frac{-3}{2}$$

$$\text{ج) } 2x^2 - 5x + 1 = 0 \quad \Delta = b^2 - 4ac \quad x = \frac{5 \pm \sqrt{19}}{4}$$

$$\Delta = 25 - 4 = 19$$

$$\text{د) } 4x^2 + 7x + 9 = 0 \quad \Delta = 49 - (4 \times 9) = -9 < 0 \rightarrow \text{No real roots}$$

$$\text{الف) } 5^2 - 2P = 3^2 - 2(-2) = 9 - (-4) = 13$$

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

$$S = \frac{3}{1} = 3$$

$$\text{ب) } 5^2 - 3SP = 3^2 - 3(3)(-2) = 25 - (-18) = 43$$

$$P = \frac{-2}{1} = -2$$

$$\text{الف) } \begin{pmatrix} 7 \\ 5 \end{pmatrix} + \begin{pmatrix} 9 \\ 2 \end{pmatrix} = \frac{7 \times 9}{1 \times 1} = 63 + \frac{9 \times 2}{1 \times 1} = 78 = \Delta$$

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$$\text{ب) } \begin{pmatrix} 9 \\ 3 \end{pmatrix} - \begin{pmatrix} 1 \\ 2 \end{pmatrix} = \frac{9 \times 1}{1 \times 1} = 9 - \frac{1 \times 2}{1 \times 1} = 7 = \Delta$$