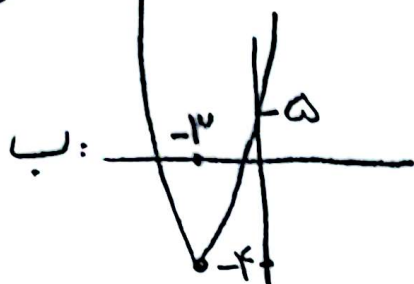


$$y = x^2 + 9x + 5$$



الف =

$$\text{Min} \left| \begin{aligned} \frac{-b}{2a} &\rightarrow \frac{-9}{2} = -4.5 \\ \frac{-\Delta}{4a} &\rightarrow \frac{-(39-20)}{4} = \frac{-19}{4} = -4.75 \end{aligned} \right.$$

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



الف =

$$\text{Max} \left| \begin{aligned} \frac{-b}{2a} &= \frac{-4}{-2} = 2 \\ \frac{-\Delta}{4a} &= \frac{-(16-12)}{-4} = \frac{-4}{-4} = 1 \end{aligned} \right.$$

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$$0 = -x^2 + 4x - 3 \rightarrow \Delta = b^2 - 4ac \rightarrow 16 - 12 = 4 \quad \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow x_1 = \frac{-4+2}{-2} = 1, x_2 = \frac{-4-2}{-2} = 3$$

جواب دربر خورده با محور x (y=0) $x_1 = 1, x_2 = 3$

الف: $2x^2 - 3x + a = 0 \quad \Delta > 0 \rightarrow b^2 - 4ac > 0 \rightarrow 9 - 4a > 0 \rightarrow 9 > 4a \rightarrow \frac{9}{4} > a$

ب: $\Delta = 0 \rightarrow 9 - 4a = 0 \rightarrow a = \frac{9}{4}$

ج: $\Delta < 0 \rightarrow 9 - 4a < 0 \rightarrow a > \frac{9}{4}$

د: $\Delta \geq 0 \rightarrow 9 - 4a \geq 0 \rightarrow a \leq \frac{9}{4}$

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الف: $x^2 - 2x - 1 = 0 \xrightarrow{+1} x^2 - 2x + 1 = 2 \rightarrow (x-1)^2 = 2$

$$x-1 = \pm\sqrt{2} \rightarrow x = 1+\sqrt{2}, x = 1-\sqrt{2}$$

ب: $x^2 - x - 1 = 0 \xrightarrow{+\frac{1}{x}} x - 1 + \frac{1}{x} = \frac{1}{x} \rightarrow (x - \frac{1}{x})^2 = \frac{1}{x^2} + 1 \frac{5}{x}$

$$x - \frac{1}{x} = \pm\sqrt{\frac{5}{x^2}} \rightarrow x_1 = \frac{1+\sqrt{5}}{2}, x_2 = \frac{1-\sqrt{5}}{2}$$

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الف: $x^2 - 2x - 1 = 0 \quad \Delta = b^2 - 4ac \rightarrow 4 - (-4) = 8$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow \frac{2 \pm \sqrt{8}}{2} \rightarrow \frac{2 \pm 2\sqrt{2}}{2} \rightarrow 1 \pm \sqrt{2}$$

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ب: $x^2 + x - 4 = 0 \quad \Delta = 1 - (-16) = 17$

$$x = \frac{-1 \pm \sqrt{17}}{2}$$

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الف: $x^2 - 11x + 18 = 0 \rightarrow (x-4)(x-7) = 0 \quad x = +4 \quad x = +7$
 ب: $x^2 + 13x - 18 = 0 \rightarrow (x+18)(x-1) = 0 \quad x = -18 \quad x = +1$

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الف: $\Delta x^2 - 12x + 7 = 0 \rightarrow x^2 - 12x + 36 = 0$
 $(x-6)(x-6) = 0 \rightarrow x = \frac{6}{1}, x = \frac{-6}{1} = -6$
 ب: $3x^2 - 10x + 7 = 0 \rightarrow x^2 - 10x + 21 = 0$
 $(x-7)(x-3) = 0 \rightarrow x = \frac{7}{1}, x = \frac{3}{1} = 3$

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الف: $2x^2 - 5x + 3 = 0 \rightarrow a+b+c=0 \quad x = \frac{c}{a} = \frac{3}{2}, x = 1$
 ب: $2x^2 + 5x + 3 = 0 \rightarrow a+c=b \quad x = \frac{-c}{a} = \frac{-3}{2}, x = -1$
 ج: $2x^2 - 5x + 1 = 0 \rightarrow \Delta = 25 - 8 = 17 \quad x = \frac{5 \pm \sqrt{17}}{4}$
 د: $4x^2 + 7x + 9 = 0 \rightarrow \Delta = 49 - 144 = -95$

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$x^2 - 3x - 2 = 0$
 $S = \text{مجموع} = \frac{-b}{a} \quad P = \text{ضرب} = \frac{c}{a} \quad S = \frac{3}{1} = 3 \quad P = \frac{-2}{1} = -2$
 ا: $S^2 - 2P = \left(\frac{3}{1}\right)^2 - \left(\frac{-2}{1}\right) = 9 + 2 = 11$
 ب: $S^3 - 3SP = 27 - \left(\frac{3}{1} \times \frac{-2}{1}\right) = 27 + 6 = 33$

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الف: $\left(\frac{V}{\omega}\right) + \left(\frac{q}{\mu}\right) = \frac{V \times q \times \omega \times \mu}{\omega \times \mu \times \mu \times \mu} = \frac{\mu V}{\mu} = V = \frac{n!}{k!(n-k)!}$
 $21 + \frac{9 \times 1}{\mu} = \frac{V \mu}{\mu} = \mu V \rightarrow \mu V + 21 = 5V$
 ب: $\left(\frac{q}{\mu}\right) - \left(\frac{1}{\mu}\right) = \frac{\mu q \times \mu \times V}{\mu \times \mu} - \frac{1 \times V}{\mu} = \mu q - 1 = 5q$

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