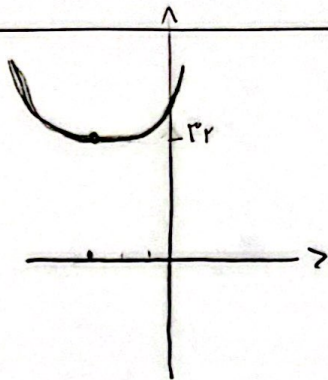


$$y = x^2 + 4x + a$$

$$\left[\frac{-b}{2a} \rightarrow \frac{-4}{2} = -2 \right]$$

$$\left[\frac{-\Delta}{4a} \rightarrow 32 \right]$$

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



min

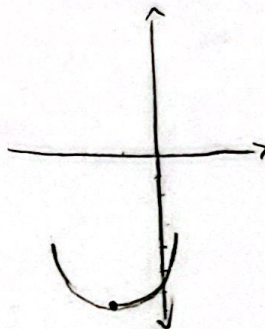
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$$y = x^2 + 2x - 3$$

$$\left[\frac{-b}{2a} \rightarrow -1 \right]$$

$$\left[\frac{-\Delta}{4a} \rightarrow -4 \right]$$

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



min

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۱) $\Delta < 0$
۲) $\Delta = 0$
۳) $\Delta > 0$

$$\Delta > 0 \rightarrow b^2 - 4ac > 0 \rightarrow 4 - 4(1)(a) > 0 \rightarrow 4 - 4a > 0 \rightarrow 1 - a > 0 \rightarrow a < 1$$

$$\Delta = 0 \rightarrow b^2 - 4ac = 0 \rightarrow 4 - 4a = 0 \rightarrow 1 - a = 0 \rightarrow a = 1$$

$$\Delta < 0 \rightarrow b^2 - 4ac < 0 \rightarrow 4 - 4a < 0 \rightarrow 1 - a < 0 \rightarrow a > 1$$

$$a + b + c = 0 \rightarrow 1 - 3 + a = 0 \rightarrow a = 2 \rightarrow x = \frac{1}{2}, 1$$

$$x^2 - 2x - 1 = 0 \xrightarrow{+1} x^2 - 2x + 1 = 2 \xrightarrow{\text{اخذ}} (x-1)^2 = 2$$

$$\xrightarrow{\text{اخذ}} (x-1) = \pm \sqrt{2} \rightarrow x = \pm \sqrt{2} + 1$$

$$x^2 - 12x - 1 = 0 \rightarrow (x-a)^2 = x^2 - 2ax + a^2 \rightarrow -2a = -12 \rightarrow a = 6$$

$$a^2 \rightarrow 36 \rightarrow \frac{1}{2} + 1 = \frac{3}{2} \rightarrow x^2 - x - 1 + \frac{3}{2} = \frac{3}{2} \rightarrow x^2 - x + \frac{1}{2} = \frac{3}{2}$$

$$\rightarrow (x - \frac{1}{2})^2 = \frac{5}{2} \rightarrow x - \frac{1}{2} = \pm \sqrt{\frac{5}{2}} \rightarrow x = \pm \sqrt{\frac{5}{2}} + \frac{1}{2}$$

$$x^2 - 2x - 1 = 0 \xrightarrow{+1} x^2 - 2x + 1 = 2 \xrightarrow{\text{اخذ}} (x-1)^2 = 2$$

$$\Delta \rightarrow 4 - 4(1)(-1) = 8$$

$$\rightarrow x^2 + x - 4 < 0$$

$$\Delta \rightarrow 1 - 4(1)(-4) = 17$$

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

$$\frac{-b \pm \sqrt{\Delta}}{2a}$$

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

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$$\text{الف} \rightarrow x^2 - 11x + 18 = 0 \quad (x-7)(x-2)$$

$$\text{رسمها} \rightarrow 7, 2$$

$$\rightarrow x^2 + 13x - 18 = 0 \quad (x-2)(x+9)$$

$$\text{رسمها} \rightarrow +9, -2$$

$$\text{الف} \rightarrow 5x^2 - 12x + 7 = 0 \rightarrow x^2 - 12x + 14 = 0 \quad (x-7)(x-2)$$

$$\text{رسمها} \rightarrow x = \frac{12 \pm \sqrt{144 - 4 \cdot 5 \cdot 7}}{2 \cdot 5} = \frac{12 \pm \sqrt{14}}{10}$$

$$\rightarrow 3x^2 - 10x + 7 = 0 \rightarrow x^2 - 10x + 21 = 0 \quad (x-7)(x-3)$$

$$\text{رسمها} \rightarrow x = \frac{10 \pm \sqrt{100 - 4 \cdot 3 \cdot 7}}{2 \cdot 3} = \frac{10 \pm \sqrt{16}}{6}$$

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

$$\frac{-b \pm \sqrt{\Delta}}{2a}$$

$$a+b+c=0 \rightarrow \frac{a}{1} = \frac{b}{-1} = \frac{c}{1}$$

$$a+c=b \rightarrow -1 = \frac{b}{-1}$$

$$\Delta \rightarrow b^2 - 4ac \rightarrow 16 - 4(1)(1) = 12 \quad \frac{1 \pm \sqrt{12}}{2}$$

$$\Delta \rightarrow 49 - 4(7)(9) = 128 \quad \frac{-7 \pm \sqrt{128}}{1}$$

$$\text{الف} = 5^2 - 2p \rightarrow 9 - 2(-2) = 13$$

$$\frac{-b}{a} = 5$$

$$\frac{c}{a} = p = -2$$

$$S = \frac{+10}{1} = 10$$

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

$$\rightarrow 5^2 - 10S + P \rightarrow 25 - 10(10) + (-2) = -97$$

$$\text{الف} = \binom{7}{5} + \binom{9}{2} \rightarrow \binom{7}{5} = \frac{7!}{5!2!} = \frac{7 \times 6 \times 5!}{5! \times 2!} = 21$$

$$\binom{9}{2} = \frac{9!}{2!7!} = \frac{9 \times 8 \times 7!}{2! \times 7!} = 36 \rightarrow 36 + 21 = 57$$

$$\rightarrow \binom{9}{3} - \binom{1}{2} = \binom{9}{3} = \frac{9!}{3!6!} = \frac{9 \times 8 \times 7 \times 6!}{3! \times 6!} = \frac{9 \times 8 \times 7}{6} = 84$$

$$\binom{1}{2} = \frac{1!}{2!0!} = \frac{1 \times 1 \times 0!}{2! \times 0!} = 0 \rightarrow 84 - 0 = 84$$