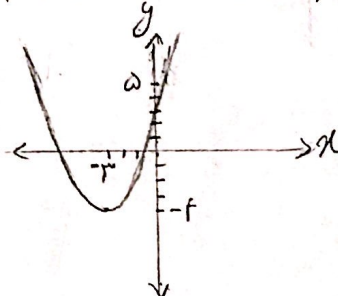


$$y = x^2 + 4x + 5 \xrightarrow{x=+} \min \rightarrow \text{ext} \quad \left| \quad x = \frac{-b}{2a} = \frac{-4}{2} = -2 \right|$$

$$\begin{aligned} a &= 1 \\ b &= 4 \\ c &= 5 \end{aligned}$$

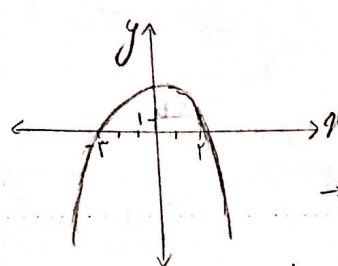


$$y = \frac{-\Delta}{4a} = \frac{-(b^2 - 4ac)}{4a} = \frac{-(16 - 20)}{4} = \frac{-14}{4} = -\frac{7}{2}$$

(۲)

$$y = -x^2 + 4x - 3 \xrightarrow{x=-} \max \rightarrow \text{ext} \quad \left| \quad x = \frac{-b}{2a} = \frac{-4}{-2} = 2 \right|$$

$$\begin{aligned} a &= -1 \\ b &= 4 \\ c &= -3 \end{aligned}$$



→ نقاط ۲، -۳ و ۱ را قطع می‌کند

(۳)

$$x^2 - 2x + a = 0 \rightarrow a = 2 / b = -2 / c = a$$

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

$$\Delta = 4 - 4a = 0 \quad 4 = 4a \quad a = \frac{1}{1}$$

$$\Delta = 4 - 4a < 0 \quad 4 < 4a \quad a > \frac{1}{1}$$

$$\Delta = 4 - 4a \geq 0 \quad 4 \geq 4a \quad a \leq \frac{1}{1}$$

(الف) ۲ جواب حقیقی $\Delta > 0$

(ب) یک جواب حقیقی $\Delta = 0$

(ج) فاقد جواب حقیقی $\Delta < 0$

(د) دارای یک جواب $\Delta \geq 0$

$$x^2 - 2x - 1 = 0 \rightarrow x^2 - 2x = 1$$

$$\xrightarrow{\text{به طرف (۱) اضافه کنیم}} x^2 - 2x + 1 = 1 + 1$$

$$x^2 - 2x + 1 = 2$$

$$(x-1)^2 = 2$$

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

$$x = 1 \pm \sqrt{2}$$

$$x^2 - x - 1 = 0 \rightarrow x^2 - x = 1 \rightarrow x^2 - x + \frac{1}{4} = 1 + \frac{1}{4}$$

$$\left(x - \frac{1}{2}\right)^2 = 1 + \frac{1}{4} \rightarrow \left(x - \frac{1}{2}\right)^2 = \frac{5}{4} \rightarrow x - \frac{1}{2} = \pm \sqrt{\frac{5}{4}}$$

$$x - \frac{1}{2} = \pm \frac{\sqrt{5}}{2} \rightarrow x = \frac{1}{2} \pm \frac{\sqrt{5}}{2} \rightarrow x = \frac{1 \pm \sqrt{5}}{2}$$

(۴)

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

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

$$x^2 + x - 1 = 0 \rightarrow \Delta = b^2 - 4ac \rightarrow 1^2 - (-4) = 1 + 4 = 5$$

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow \frac{-1 \pm \sqrt{5}}{2}$$

(الف)

(ب)

۴

۵

$$x^2 - 11x + 28 = 0 \rightarrow (x-4)(x-7) \rightarrow \boxed{x=4}$$

(الف)

$$x^2 + 3x - 28 = 0 \rightarrow (x+7)(x-4) \rightarrow \boxed{x=-7}$$

$$\boxed{x=4}$$

(ب)

$$\omega x^2 - 12x + 1 = 0 \rightarrow x^2 - 12x + 20 = 0 \rightarrow (x-4)(x-5) \rightarrow \boxed{x=4}$$

$$\boxed{x=5}$$

(الف)

(ب)

$$2x^2 - 10x + 1 = 0 \rightarrow x^2 - 5x + 0.5 = 0 \rightarrow (x-1)(x-4) \rightarrow \boxed{x=1}$$

$$\boxed{x=4}$$

(الف)

$$2x^2 - 5x + 2 = 0 \rightarrow x^2 - 2.5x + 1 = 0 \rightarrow (x-1)(x-2) \rightarrow \boxed{x=1}$$

$$\boxed{x=2}$$

(الف) ارزش درستی

(ب)

$$2x^2 + 5x + 2 = 0 \rightarrow x^2 + 2.5x + 1 = 0 \rightarrow (x+1)(x+2) \rightarrow \boxed{x=-1}$$

$$\boxed{x=-2}$$

(الف) ارزش درستی

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$$2x^2 - 5x + 1 = 0 \quad x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-(-5) \pm \sqrt{17}}{4} = \frac{5 \pm \sqrt{17}}{4}$$

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

$$\Delta = 17$$

(ب)

(الف) $\Delta < 0$ پس ریشه حقیقی ندارد

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

$$\Delta = -90$$

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

$$S = x_1 + x_2 = -\frac{b}{a} = -\frac{-3}{1} = \frac{3}{1} = 3 \rightarrow \text{مجموع}$$

$$P = x_1 \times x_2 = \frac{c}{a} = \frac{-2}{1} = -2 \rightarrow \text{ضرب}$$

$$s^2 - 2p \rightarrow 3^2 - (-4) = 13$$

$$s^3 - 3sp \rightarrow 3^3 - (11) = 10$$

(الف)

(ب)

9

(ب)

$$\begin{pmatrix} 1 \\ 2 \end{pmatrix} + \begin{pmatrix} 1 \\ 2 \end{pmatrix} = \frac{1 \times 2 + 2 \times 1}{1 \times 1 + 1 \times 1} + \frac{1 \times 2}{1 \times 1} = 2 + 2 = 4$$

(الف)

(ب)

$$\begin{pmatrix} 1 \\ 2 \end{pmatrix} - \begin{pmatrix} 1 \\ 2 \end{pmatrix} = \frac{1 \times 2 - 2 \times 1}{1 \times 1 - 1 \times 1} = 1 - 1 = 0$$

(الف)

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