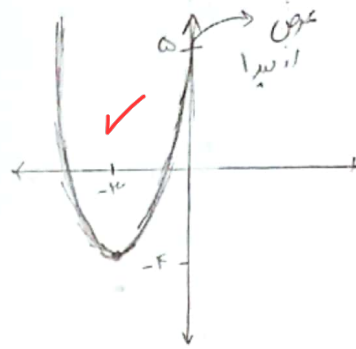


$y = x^2 + 4x + 5$ عوض از x

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

$$9 - 16 + 5 = -2$$

$Min \left[\begin{matrix} -2 \\ -4 \end{matrix} \right]$



۲

$y = x^2 + 4x - 3$ عوض از x

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

$$-4 + 16 - 3 = 9$$

$$Max \left[\begin{matrix} 9 \\ 1 \end{matrix} \right]$$



$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-4 \pm \sqrt{4}}{-2}$

$\Delta = b^2 - 4ac = 16 - 4(1)(-3) = 28$

دستگاه ۳ محور را تقاطع می‌کند

$$x = \frac{-4 \pm \sqrt{28}}{-2} = 1$$

$$x = \frac{-4 \pm \sqrt{28}}{-2} = 3$$

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

$\Delta = b^2 - 4ac = 9 - 4(2)(a) = 0$

$9 - 8a = 0 \rightarrow 9 = 8a \rightarrow a = \frac{9}{8} = 1,125$

$a \in (-\infty, 1,125) \rightarrow \Delta > 0$

$\Delta = 0 \rightarrow a = 1,125$ (طبق سوال ب)

$a \in (1,125, \infty) \rightarrow \Delta < 0$

$a < 1,125$ $a \in (-\infty, 1,125)$

۴

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

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

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

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

۲

ب) $x^2 - x - 1 = 0 \rightarrow x^2 - x + \frac{1}{4} = 1 + \frac{1}{4} \rightarrow (x - \frac{1}{2})^2 = \frac{5}{4} \rightarrow x - \frac{1}{2} = \pm\frac{\sqrt{5}}{2}$

$$x = \frac{1 + \sqrt{5}}{2}$$

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

۲

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

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

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

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

۲

ب) $x^2 + x - 4 = 0 \rightarrow \Delta = b^2 - 4ac = 1 - 4(1)(-4) = 17$

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

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

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

۲

$$x^2 - 11x + 18 = 0 \rightarrow (x-9)(x-2) = 0 \rightarrow \begin{cases} x=9 \\ x=2 \end{cases} \checkmark$$

$$\rightarrow) x^r + vx - rA = 0 \rightarrow (x+v)(x-r) = 0 \begin{cases} x = -v \\ x = r \end{cases} \checkmark$$

- weil $\omega x^T - 1 + u + v = 0 \rightarrow x^T - 1 + u + v = 0 \rightarrow (x - \omega)(x - v) \rightarrow x = \frac{\omega}{\omega} = 1$
 $\checkmark \rightarrow x = \frac{v}{\omega} = 1, 1$

$$b) \mu \pi \frac{\mu}{\mu} \log n + V = 0 \rightarrow \pi^{\mu} \log \pi + \mu = 0 \rightarrow (\pi - \mu)(\pi - V) = 0 \rightarrow \begin{cases} \pi = \frac{\mu}{\mu} = 1 \\ \pi = \frac{V}{\mu} = \mu, \bar{\mu} \end{cases}$$

$\frac{1}{2}x^2 - 2x + 1 = 0 \xrightarrow{\text{multiplied by 2}} x^2 - 4x + 2 = 0$
 $a + c + b = 0 \quad \checkmark \quad \boxed{x=1} \quad a = \frac{c}{a} = \frac{4}{1} = 4, \Delta \quad \checkmark$

$$\rightarrow) \quad 1x^2 + 2x + 1 = 0 \quad \text{mit } a=1, b=2, c=1$$

$$c) \quad r_1 r_2 - \Delta r + 1 = 0 \quad \Delta = \frac{b^2}{a^2} - \frac{4 \cdot (-1) \cdot 1}{1} = 17$$

$$r = \frac{-b \pm \sqrt{\Delta}}{a} = \frac{-1 \pm \sqrt{17}}{1} \rightarrow \begin{cases} r_1 = -1 + \sqrt{17} \\ r_2 = -1 - \sqrt{17} \end{cases}$$

2) $f(x) + V(x) + 9 = 0 \Rightarrow \Delta z = b^2 - 4ac = 49 - \frac{4(1)(9)}{144} = -95 \rightarrow$ پس این معادله را حل نمی‌دهیم

$$x^2 - 12x - 7 = 0 \quad \Delta = b^2 - 4ac = 9 - \frac{4(+)(-7)}{(-1)} = 14 \rightarrow \sqrt{14} \approx 3.74$$

$$S = -\frac{b}{a} \quad P = \frac{c}{a} \rightarrow S = \frac{r}{1} = r \quad P = \frac{-r}{1} = -r$$

الف) $S^2 - 2P = 9 + 4 = 13$ ✓

$$b) S^{-1}SP = PV - \cancel{K(P)}(-1) = \cancel{P} \quad \text{---} \quad \text{---}$$

الف) $\binom{v}{8} + \binom{9}{r} \rightarrow \frac{v!}{8! \times r!} = \frac{v!}{r!} = r \cdot \binom{v}{r} = \frac{v \times 9}{r! \times v!} = \frac{v}{r!} = 100 \rightarrow \binom{v}{8} + \binom{9}{r} = 100$

$$\text{b.) } \begin{pmatrix} 9 \\ 10 \end{pmatrix} - \begin{pmatrix} 1 \\ 1 \end{pmatrix} = 1F - 1A = \boxed{09} \quad \checkmark$$