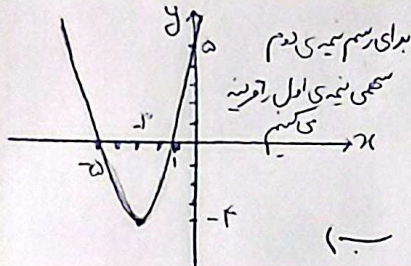


الف) در واقع نقطه اکسترم $a > 0 \Rightarrow \min \rightarrow$

بائیں تریں نقطہ سہمی است

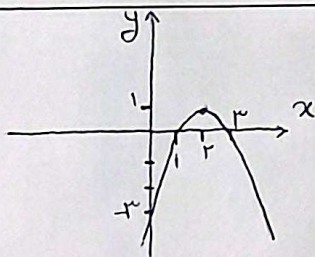
$$\text{ext} \begin{vmatrix} -r \\ -r \end{vmatrix}$$



Text → جایز آری :
x دست
آینه

$$y_{\text{ext}} = \frac{-\Delta}{f_a} = \frac{-(b^r - f_a c)}{f_a} = \frac{-(4^r - f(1)(\Delta))}{f \times 1} = \frac{-19}{f} = -f$$

$y = \underbrace{-x^2}_a + \underbrace{17x}_b - \underbrace{3}_c$
حل بر خود ماصور



$$x_{ext} = \frac{-b}{1a} \Rightarrow \frac{-f}{-1 \times 2} = 2 \quad \text{الف}$$

$$y_{ext} \rightarrow \text{جائزہ ای: } y_{ext} = -r^2 + f(r) - 3 = 1$$

$a < 0 \Rightarrow \max \rightarrow$ نقطة الـ $\min$ باللاتين نقطة $\min$ بالاسم

$$a+b+c = -1 + 1 + (-1) = 0 \Rightarrow \quad (\underline{\quad})$$

$$x_1 = 1 \quad x_r = \frac{c}{a} = \frac{-r}{-1} = r$$

$$\Delta = b^r - f(a)c \Rightarrow \Delta = (-r)^r - f(a)(r)$$

$$\Rightarrow \Delta = 9 - 1a > 0 \Rightarrow 9 > 1a$$

$$\Rightarrow \frac{a}{\lambda} > a \Rightarrow \text{الن} = \{a \in \mathbb{R} \mid \frac{a}{\lambda} > a\}$$

الف) در جواب متمایز حقیقی $\Delta > 0$

(ب) ریشه مضاعف $\Delta = 0$

$$\Delta = b^r - f_{ac} \Rightarrow \Delta = 9 - 1a = 0 \Rightarrow$$

$$a = \sqrt{a} \Rightarrow \frac{a}{\sqrt{a}} = \sqrt{a} \Rightarrow \sqrt{a} = \{a \in \mathbb{R} \mid \frac{a}{\sqrt{a}} = \sqrt{a}\}$$

(ج) افادہ ہے حقیقی اور ن = Δ_{50}

$$\mathcal{C} = \{a \in \mathbb{R} \mid \frac{9}{\lambda} < a\}$$

الف) $x^2 - \frac{r}{b}x - 1 = 0 \xrightarrow{+r} x^2 - rx + 1 = r \Rightarrow (x-1)^2 = r \Rightarrow x-1 = \pm\sqrt{r}$
 ملاحظه: $\left(\frac{b}{r}\right)^2 = \left(\frac{-r}{r}\right)^2 = 1 \Rightarrow$ طرف معادله را ± 1 می کنیم $\Rightarrow x = 1 + \sqrt{r}$
 $\searrow 1 - \sqrt{r}$

$\therefore x^r - \frac{a}{r} = 0 \xrightarrow{+\frac{a}{r}} x^r - \frac{a}{r} + \frac{a}{r} = \frac{a}{r} \Rightarrow (x - \frac{1}{r})^r = \frac{a}{r} \Rightarrow x - \frac{1}{r} = \pm \sqrt[r]{\frac{a}{r}} = \pm \sqrt[r]{\frac{a}{r}}$
 بالتالي: $(\frac{b}{r})^r = (\frac{-1}{r})^r = \frac{1}{r} \Rightarrow \sqrt[r]{\frac{b}{r}} = \sqrt[r]{\frac{-1}{r}} = \frac{1}{r} \Rightarrow x = \frac{1}{r} \pm \sqrt[r]{\frac{a}{r}}$

$$c) \underbrace{ax^2}_{a} - \underbrace{bx}_{b} - \underbrace{c}_{c} = 0$$

$$\Delta = b^r - f a c \Rightarrow \Delta = (-r)^r - f(-1)(1) = 1$$

$$x_{1,2} = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow x_{1,2} = \frac{r \pm \sqrt{\Delta}}{r(1)}$$

$$\frac{1}{x} \cdot x^1 \cdot x^1 \cdot x^2 = 0$$

$$\Rightarrow x_1 = \frac{r + r\sqrt{r}}{r} = 1 + \sqrt{r}$$

$$\Delta = b^r - f(a)(c) \Rightarrow \Delta = (1)^r - f(1)(-1) = 1V$$

$$x_{1,2} = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$\Rightarrow x_{1,2} = \frac{-1 \pm \sqrt{14}}{r} \Rightarrow x_1 = \frac{-1 + \sqrt{14}}{r} \quad x_2 = \frac{-1 - \sqrt{14}}{r}$$

الف) $x^2 - 11x + 18 = 0$ $(x-4)(x-3) = 0 \Rightarrow x_1 = 4$
 $-4 + (-3) = -11$ $-4 \times -3 = 18$ $x_2 = 3$

ب) $x^2 + 13x - 18 = 0$ $(x-4)(x+17) = 0 \Rightarrow x_1 = -17$
 $17 + (-4) = 13$ $17 \times -4 = -18$ $x_2 = 4$

الف) $\frac{a}{x} x^2 - 11x + \frac{18}{x} = 0 \xrightarrow{axC} x^2 - 11x + 18 = 0 \Rightarrow (x-4)(x-3) = 0 \Rightarrow x_1 = 4$
 $-4 + (-3) = -11$ $-4 \times -3 = 18$ $x_2 = 3$

اما چون $a = a$ در C ضرب کردیم $\Rightarrow$ ریشه های بدست آمده را $\div a$ می کنیم

ب) $\frac{1}{x} x^2 - 10x + \frac{17}{x} = 0 \xrightarrow{axC} x^2 - 10x + 17 = 0 \Rightarrow (x-17)(x-1) = 0 \Rightarrow x_1 = 17$
 $-17 + (-1) = -18$ $-17 \times -1 = 17$ $x_2 = 1$

اما چون $a = 17$ در C ضرب کردیم $\Rightarrow$ ریشه های بدست آمده را $\div 17$ می کنیم

الف) $\frac{1}{a} x^2 - \frac{a}{b} x + \frac{18}{c} = 0$ $a+b+c=0 : 1+(-a)+18=0 \Rightarrow x_1 = 1$ $x_2 = \frac{c}{a} = \frac{18}{1}$

ب) $\frac{1}{a} x^2 + \frac{a}{b} x + \frac{18}{c} = 0$ $a+c=b : 1+18=a \Rightarrow x_1 = -1$ $x_2 = \frac{-c}{a} = \frac{-18}{1}$

ج) $\frac{1}{a} x^2 + \frac{a}{b} x + \frac{18}{c} = 0$ $\Delta = b^2 - 4ac \Rightarrow \Delta = (-a)^2 - 4(1)(18) = 18 - 18 = 0$ $x_{1,2} = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-(-a) \pm 0}{2(1)} = \frac{a}{2}$

د) $\frac{1}{a} x^2 + \frac{a}{b} x + \frac{9}{c} = 0$ $\Delta = b^2 - 4ac \Rightarrow \Delta = 18 - 4(1)(9) = 18 - 36 = -18 < 0$ $\Rightarrow$ معادله را ندارد

$ax^2 - 13x + 12 = 0$ $a=1$ $b=-13$ $c=12$ $S = \frac{-b}{a} = \frac{-(-13)}{1} = 13$ $P = \frac{c}{a} = \frac{12}{1} = 12$

الف) $S^2 - 2P \rightarrow 13^2 - 2 \times 12 = 169 - 24 = 145$

ب) $S^2 - 3PS \rightarrow 13^2 - 3(13)(12) = 169 - 468 = -299$

الف) $\binom{9}{5} + \binom{9}{4}$ $\binom{9}{5} = \binom{9}{4} \Rightarrow \frac{9 \times 8 \times 7 \times 6}{4!} + \frac{9!}{4! \times 5!} = 126 + 126 = 252$

$\binom{m}{n} = \frac{m!}{n! \times (m-n)!}$ $\frac{9!}{4! \times 5!} = 126$

ب) $\binom{9}{12} - \binom{1}{2}$ $\frac{9!}{12! \times (9-12)!} - \frac{1!}{2! \times (1-2)!} = 0 - 0 = 0$