هلیا عقاری

۲۰

① $y=(a-1)x^2+x+3$, $\frac{-b}{2a}=2 \Rightarrow \frac{-1}{2(a-1)}=2$

$\Rightarrow -1=4(a-1) \Rightarrow -1=4a-4 \to 4a=3 \to a=\frac{3}{4}$ ۲

$y=-\frac{1}{4}x^2+x+3 \to -\frac{1}{4}x^2+x+3=0 \xrightarrow{\times(-4)} x^2-4x-12=0$

$(x-6)(x+2)=0 \xrightarrow{x>0} \boxed{x=6}$

② * جدول تعیین علامت نشان می اهد محدوده ۲ طرف ریشه منفیست . $\Leftarrow$ $\Delta>0$, $m<0$

$\Delta>0 \to 25-4m^2>0 \to 4m^2<25$ $m^2<\frac{25}{4} \to -\frac{5}{2}<m<\frac{5}{2}$ ۲

$\xrightarrow{m<0} -\frac{5}{2}<m<0$

③ $x=\frac{3\pm\sqrt{5}}{3}=\frac{6\pm2\sqrt{5}}{6} \Rightarrow -b=6 \to b=-6$, $2a=6 \to a=3$

و $\Delta=20 \to b^2-4ac=20$

$(-6)^2-4\times3\times c=20 \to 36-12c=20 \to 12c=16 \Rightarrow c=\frac{16}{12}=\frac{4}{3}$ ۲

$(3x^2-6x+\frac{4}{3})\times 3=\boxed{9x^2-18x+4=0}$

④ + ۵ صفحه بعدی

⑤ $y=ax^2+bx+5$ و $\frac{-b}{2a}=2 \Rightarrow -b=4a \to b=-4a$ ★

$y(2)=9 \to 4a+2b+5=9 \Rightarrow 4a+2b=4 \to 2a+b=2$

$\xrightarrow{★} 2a-4a=2 \to -2a=2 \to a=-1$, $b=-4a=4$ ۲

$\Rightarrow y=-x^2+4x+5 \to$

~~منحنی در سهمی جدول تعیین علامت~~

در بالای محور x ها = منحنی که y مثبت شود.

$-x^2+4x+5=0$ $x^2-4x-5=0$

$(x-5)(x+1)=$

	-1		5	
$-$		$+$		$-$

$\boxed{(-1,5)}$

$2x^2 - 8x + m + 2 = 0$ ، $3\alpha^2 + \beta^2 = 12 = \alpha^2 + \beta^2 + \underbrace{2\alpha^2}_{8\alpha - (m+2)} = 12$ (۸

$S = 4$ ، $P = \frac{m+2}{2}$

$$\underbrace{\alpha^2 + \beta^2}_{S^2 - 2P} + 8\alpha - (m+2) = 12 \Rightarrow 16 - \cancel{2} \times \frac{m+2}{\cancel{2}} = 16 - (m+2) + 8\alpha - m - 2 = 12$$

۳)

$$\cancel{16} - m - 2 + 8\alpha - m - 2 = \cancel{12} \to -2m \cancel{-4} + 8\alpha = \cancel{-4} \Rightarrow m = 4\alpha \quad \star$$

$$2\alpha^2 - 8\alpha + 4\alpha + 2 = 0 \to 2\alpha^2 - 4\alpha + 2 = 0 \xrightarrow{\div 2} \alpha^2 - 2\alpha + 1 = 0$$

$$\Rightarrow (\alpha - 1)^2 = 0 \to \alpha = 1 \xrightarrow{\star} m = 4 \times 1 = \boxed{4}$$

$\alpha x^2 - 7x + 9\beta = 0$ (۹

$$\alpha \cancel{\beta} = \frac{9\cancel{\beta}}{\alpha} \Rightarrow \alpha^2 = 9 \to \alpha = \pm 3 \;/\; \cancel{\alpha + \beta = \frac{7}{\alpha}}$$

۲)

$$\alpha + \beta = \frac{7}{\alpha} \begin{cases} \alpha = 3 \to 3 + \beta = \frac{7}{3} \to \beta = -\frac{2}{3} & \text{فرض } \neq \text{ غ ق ق} \\ \alpha = -3 \to -3 + \beta = -\frac{7}{3} \to \beta = 3 - \frac{7}{3} \to \beta = \frac{2}{3} \checkmark \end{cases}$$

$$\alpha = -3 ,\ \beta = \frac{2}{3} . \quad \frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{-\frac{7}{3}}{-2} = +\frac{7}{6}$$

$x^2 + mx - 2m = 0 \to \beta^2 + m\beta - 2m = 0 \to -m\beta = \beta^2 - 2m \quad \star$ (۷

$$\alpha^2 - m\beta = 8 \xrightarrow{\star} \underbrace{\alpha^2 + \beta^2}_{S^2 - 2P} - 2m = 8 \to (-m)^2 - 2(-2m) - 2m = 8$$

۲)

$$m^2 + 4m - 2m = m^2 + 2m - 8 = 0 \to (m+4)(m-2) = 0$$

$m \to -4 \to \Delta < 0$ فرض $\neq$ غ ق ق

$m \to 2 \to \Delta > 0 \checkmark \Rightarrow x^2 + 2x - 4 = 0 \quad \boxed{S = -2}$

$$f(x) = mx^2 + 4x + \frac{m+12}{2} \quad , \quad -\frac{\Delta}{4a} = 8$$ 8

$$\Delta = 16 - \cancel{4}m\left(\frac{m+12}{\cancel{2}}\right) = 16 - 2m^2 - 24m = 0$$

$$\frac{-\Delta}{4a} = \frac{2m^2 + 24m - 16}{4m} = \frac{m^2 + 12m - 8}{2m} = 8$$

$$m^2 + 12m - 8 = 16m \to m^2 - 4m - 8 = 0 \to (m-4)(m+2) = 0$$

$m = 4 \to$ max , مینیمم $\to$ غ ق ق

$m = -2$ ✓

$$f(x) = -2x^2 + 4x + 6 \Rightarrow$$

$$-2x^2 + 4x + 6 = 0 \xrightarrow{\div(-2)} x^2 - 2x - 3 = 0 \quad (x-3)(x+1) = 0$$

$\Rightarrow x = 3 , -1 \qquad K >$ ریشه دیگر $\Rightarrow \boxed{K = 3}$

$$y = ax^2 + bx + 4 \ , \ \frac{-b}{2a} = 2 \ , \ \frac{-\Delta}{4a} = 6$$ 9

$$\frac{-b}{2a} = 2 \to -b = 4a \Rightarrow b = -4a \ \star$$

$$y(2) = 6 \to 4a + 2b + 4 = 6 \to 4a + 2b = 2 \Rightarrow 2a + b = 1$$

$$\xrightarrow{\star} 2a - 4a = 1 \Rightarrow -2a = 1 \Rightarrow a = -\frac{1}{2}$$

$$b = -4a = -4 \times -\frac{1}{2} = \boxed{+2} \Rightarrow y = -\frac{1}{2}x^2 + 2x + 4$$

$$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta} = \frac{4}{-8} = \boxed{-\frac{1}{2}}$$

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$$x^2-(4a+4)x+(3a^2+6a+3)=0$$

* به ازای هردو مقدار a ، $\Delta>0$

۲

$$x=2 \longrightarrow 4-(4a+4)(2)+3a^2+6a+3$$

$$4-8a-8+3a^2+6a+3=0 \rightarrow 3a^2-2a-1=0$$

$$a=1 , -\frac{1}{3}$$

$$\Rightarrow \begin{cases} \rightarrow a=1 \rightarrow x^2-8x+12=0 \rightarrow (x-2)(x-6)=0 \quad x=2 , 6 \\ \rightarrow a=-\frac{1}{3} \rightarrow x^2-\frac{8}{3}x+\frac{4}{3}=0 \xrightarrow{\times 3} 3x^2-8x+4=0 \end{cases}$$

$$\Delta=64-48=16 \qquad \frac{8\pm\sqrt{16}}{6}=\frac{8\pm4}{6}=2 , \frac{2}{3}$$