۱۷٫۷۵

ریاضی
الف ۱۳

① $y=(a-1)x^2+x+3 \xrightarrow{\text{متقارن}} x=2 \qquad x_0=?$

$x=-\frac{b}{2a}=2 \to \frac{-1}{2(a-1)}=2 \to -1=4(a-1) \to -1=4a-4$ ۲

$a=\frac{3}{4} \to y=-\frac{1}{4}x^2+x+3$

$x_0 \to 0=-\frac{1}{4}x^2+x+3 \to -4x^2+4x+12 \begin{cases} \boxed{x=6 \ \text{قق}} \\ x=-2 \ \text{غق} \end{cases}$

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② $f(x)=mx^2-5x+m \qquad m=?$

x		x_1		x_2	
$f(x)$	$-$	0	$+$	0	$-$

$\Delta>0 , m<0$ ۲

$b^2-4ac>0 \to 25-4m^2>0 \to m^2<\frac{25}{4}$

$-\frac{5}{2}<m<\frac{5}{2}$ if $m<0 \Rightarrow m=(-\frac{5}{2},0)$

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③ $x_1=\frac{3-\sqrt5}{3} , x_2=\frac{3+\sqrt5}{3}$

$P=(\frac{3-\sqrt5}{3})\times(\frac{3+\sqrt5}{3}) \Rightarrow \frac{4}{9} \qquad S=\frac{3-\sqrt5}{3}+\frac{3+\sqrt5}{3}=2$ ۲

معادله $\to x^2-Sx+P=0 \to x^2-2x+\frac{4}{9} \to 9x^2-18x+4=0$

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④ $2x^2-8x+m+2=0 \qquad \alpha<\beta , 3\alpha^2+\beta^2=12 \qquad m=?$

$3\alpha^2+\beta^2=12 \to 2\alpha^2+\underbrace{(\alpha^2+\beta^2)}_{S^2-2P}=12$ ۲

$2\alpha^2+16-m-2=12$
$2\alpha^2=8\alpha-m-2$
$\Big\} \ 8\alpha-2m+12=12 \to m=4\alpha$

$\alpha\beta=\frac{m+2}{2} \to \frac{4\alpha+2}{2}=2\alpha+1 \to \beta=\frac{2\alpha+1}{\alpha} \to \beta=3$

$\alpha+\beta=\frac{2\alpha+1}{\alpha}+\frac{\alpha^2}{\alpha}=\frac{\alpha^2+2\alpha+1}{\alpha}=4 \to \alpha=1 \to m=4$

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احمدمدائن
تکلیف ۱۳

$S(2,9) \quad y_0 = 5 \quad x>0 \; ?$ (5)

$\to y = a(x-2)^2 + 9$
$y = a(x) + 5$ $\Big\}\; a = -1$

$\to y = -x^2 + 4x + 5$ ۲

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

x		-1		5	
y	$-$	0	$+$	0	$-$

$\to (-1, 5)$

$ax^2 - 7x + 9\beta = 0 \quad \beta > 0 \quad \frac{1}{\alpha} + \frac{1}{\beta} = ?$ (6)

$\underbrace{S}_{\alpha+\beta} = \frac{7}{\alpha} \quad \underbrace{P}_{\alpha\beta} = \frac{9\beta}{\alpha} \to 9\beta = \alpha^2\beta \to \alpha = \pm 3$

if $\alpha = 3 \to \alpha + \beta = \frac{7}{\alpha} \to \beta = \frac{-2}{3}$ غ ق ق

if $\alpha = -3 \to \alpha + \beta = \frac{-7}{\alpha} \to \beta = \frac{2}{3}$ ق ق ۲

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

$x^2 + mx - 2m = 0 \quad \alpha^2 - m\beta = 8 \quad \overset{\alpha}{x_1} + \overset{\beta}{x_2} = ?$ (7) ۰/۵

$S = -m \quad \underbrace{P = -2m}$

$\alpha^2 = 2m - m\alpha \quad \alpha^2 - m\beta = 8 \quad \alpha + \beta = -m$

$\beta = \frac{-2m}{\alpha} \to \alpha^2 + \frac{2m^2}{\alpha} = 8 \to \alpha^3 + 2m^2 - 8\alpha = 0$ $\quad 2m + m^2 = 8$

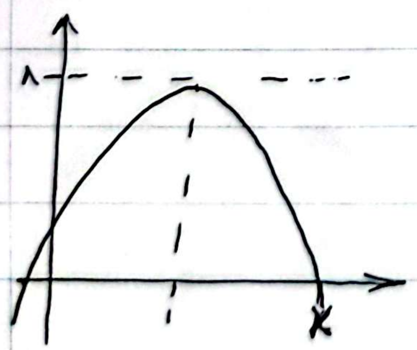
$\to \alpha + \frac{-2m}{\alpha} = -m \to m = \frac{\alpha^2}{2-\alpha}$ $\quad m = -4 \;\; \Delta < 0 \;✗$

m جایگذاری $\to \alpha^3 + 2\left(\frac{\alpha^2}{2-\alpha}\right)^2 - 8\alpha = 0 \to \alpha \simeq 1.2$ $\Big\}\; m \simeq 2$ $\quad m = 2 \;\; \Delta > 0 \;✓$

$S = -m = -2$

$\alpha + \beta = -m \to \alpha + \beta \simeq -2$

$f(x) = mx^2 + 4x + \frac{m}{2} + 7 \to$ تابع رو به پایین $\to m < 0$ (8) ۱/۲۵



$-\frac{\Delta}{4a} = 8 \to -\frac{b^2 + 4ac}{4a} = 8$

$\to \frac{-16 + 4m(\frac{m}{2} + 7)}{4m} = 8$

$\to m = -2$ ق ق

$m = 4$ غ ق ق

$f(x) = -2x^2 - 8x + 6$ $\quad -2 + \sqrt{7}$ ق ق

$0 = +x^2 + 4x - 3 \to \Delta = 28$

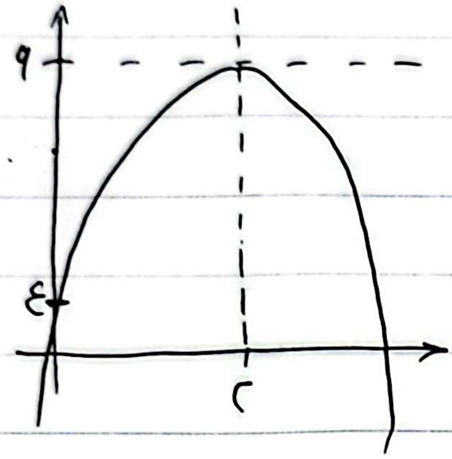
$x_1 = -2 \pm \sqrt{7}$

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

$x = 3, -1 \quad k = 3$

اطهره رئیسی
صنف ۱۳

۹



$$y = a(x-h)^2 + k = a(x-2)^2 + 6$$

$$4 = a(4) + 6 \quad \text{پس} \quad a = -\frac{1}{2}$$

(۲)

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

$$P = -8 \qquad S = 4$$

مجموع معکوس ریشه $\Rightarrow \frac{1}{x_1} + \frac{1}{x_2} \to \frac{x_1 + x_2}{x_1 x_2} = \frac{S}{P} = -\frac{1}{2}$

۱۰

$$x^2 - (4a+4)x + (3a^2 + 6a + 3) = 0 \qquad \alpha = 2 \quad \beta = ?$$

(۲)

$$\to 4 - 8a - 8 + 3a^2 + 6a + 3) = 0$$

$$3a^2 - 2a - 1 = 0 \to a = 1 \to x^2 - 8x + 12 \to x = 2,\ x = 6$$

$$\to a = -\frac{1}{3} \to x^2 - \frac{8}{3}x + \frac{4}{3} \to x = \frac{2}{3},\ x = 2$$

$\beta = 6 \leftarrow a = 1$ اگر

$\beta = \frac{2}{3} \leftarrow a = -\frac{1}{3}$ اگر
