نام و نام خانوادگی ....مهدی ابوی فیلی.......... **پاسخنامه تشریحی تکلیف شماره** ..۱۳.. **کلاس** ..یازدهم تجربی A.........

$y=(a-1)x^2+x+3$ → $-1=4(a-1)=4a-4=-1$ → $4a=3$ → $\boxed{a=\frac{3}{4}}$ متقارن → $\frac{-b}{2a}=2$ → $-b=4a$ ریشه‌ی مثبت = ? ⟹ $y=(\frac{3}{4}-1)x^2+x+3=-\frac{1}{4}x^2+x+3=0$ → $x=\frac{-1\pm\sqrt{1+3}}{-\frac{1}{2}}=\frac{-1\pm2}{-\frac{1}{2}}$ ⟹ x { $-3/-\frac{1}{2}$ → $x=6$ ✓ ; $1/-\frac{1}{2}$ → $x=-2$ → ✗ غ ق ق ✗ (طول منفی)	۱
$f(x)=mx^2-5x+m$ → { $m<0$; $\Delta>0$ → $25-4m^2>0$ → $4m^2<25$ → $m^2<\frac{25}{4}$ ⟹ $\boxed{-\frac{5}{2}<m<\frac{5}{2}}$ جدول: x : x_1 , x_2 ؛ $f(x)$: $-$ ○ $+$ ○ $-$ → شرایط { (I) $m<0$; (II) $-\frac{5}{2}<m<\frac{5}{2}$ → اشتراک → (محور اعداد: $-\frac{5}{2}$, 0 , $\frac{5}{2}$) m حدود = ? ⟹ $m:(-\frac{5}{2},0)$	۲
$\alpha=\frac{3-\sqrt5}{3}$ ، $\beta=\frac{3+\sqrt5}{3}$ → { $\alpha+\beta=S=-\frac{b}{a}$ → $\frac{3-\sqrt5}{3}+\frac{3+\sqrt5}{3}=\frac{6}{3}=2$; $P=\alpha.\beta=\frac{c}{a}$ → $(\frac{3-\sqrt5}{3})(\frac{3+\sqrt5}{3})=\frac{9-5}{9}=\frac{4}{9}$ معادله = ? → x^2-Sx+P → $x^2-2x+\frac{4}{9}$ → ($\times 9$ ضرایب صحیح) → $9x^2-18x+4$	۳
$2x^2-8x+m+2=0$ →(α) $2\alpha^2-8\alpha+m+2$ → $2\alpha^2=8\alpha-m-2$ $\alpha<\beta$ ، $3\alpha^2+\beta^2=12$ → $\alpha^2+\beta^2+2\alpha^2=S^2-2P+2\alpha^2$ →($2\alpha^2=8\alpha-m-2$) $S^2-2P+8\alpha-m-2=12$ S^2-2P ؛ m حدود = ? ⟹ { $S=4$; $P=\frac{m+2}{2}$ → $S^2-2P=16-m-2=\boxed{14-m}$ ⟹($4\alpha=m$) $2\alpha^2-8\alpha+m+2=2\alpha^2-4\alpha+2=0$ → $1=\alpha$ → $\alpha+\beta=S$ → $3=\beta$ ⟹ $14-m+8\alpha-m-2=12$ → $8\alpha=2m$ → $\boxed{4\alpha=m}$; $m=4\alpha$ → 4	۴
$S=(2,9)$ ؛ عرض از مبدا = ۵ → $y=a(x-h)^2+k$ → if l h/k مقادیر مثبت = ? ⟹ $y=a(x-2)^2+k$ → $a(x^2-4x+4)+k$ → $ax^2-4ax+4a+9=0$ ؛ عرض از مبدا ← $c=5$ ⟹ $c=5=4a+9$ → $\boxed{a=-1}$ → $-x^2+4x+5=0$ → $x^2-4x-5=(x+1)(x-5)$ ⟹ { $x=-1$; $x=+5$ → (جدول: -1 , $+5$: $-$ ○ $+$ ○ $-$) → بالای محور x ها است → $-1<m<5$ ، $m:(-1,5)$	۵

یازدهم ریاضی A — مهدی ابوفاضل

6

$\alpha x^2 - 7x + 9\beta = 0 \Longrightarrow \begin{cases} S = \alpha+\beta = \frac{7}{\alpha} \\ P = \frac{9\beta}{\alpha} \end{cases}$

$\beta > 0$

$\frac{1}{\alpha}+\frac{1}{\beta} = ? \Longrightarrow \frac{\alpha+\beta}{P} = \frac{S}{9\beta/\alpha} = ? \longrightarrow \frac{\frac{7}{\alpha}}{\frac{9\beta}{\alpha}} = \frac{7\alpha}{9\beta\alpha} = \frac{7}{9\beta} = \frac{\alpha+\beta}{\alpha\beta} \Longrightarrow 7\alpha = 9\alpha+9\beta$

$\Longrightarrow -2\alpha = 9\beta$ — جایگذاری $\Longrightarrow \alpha\beta^2 - 7\beta + 9\beta = \alpha\beta^2 + 2\beta = \beta(\alpha\beta+2) = 0 \Longrightarrow \begin{cases} \beta = 0 \\ \alpha\beta = P = -2 \end{cases}$

$\Longrightarrow P = \frac{9\beta}{\alpha} = -2 \Longrightarrow \alpha = -\frac{9}{2}\beta \longrightarrow S = \alpha+\beta = -\frac{7}{2}\beta$

$\Longrightarrow P = \alpha\beta = (-\frac{9}{2}\beta)(\beta) = -\frac{9}{2}\beta^2 = P = -2 \Longrightarrow 9\beta^2 = 4 \Longrightarrow \beta = \frac{2}{3} \longrightarrow \frac{S}{P} = \frac{-\frac{7}{2}}{\frac{2}{3}} = \boxed{\frac{-21}{4}}$

7

$x^2 + mx - 2m = 0 \xrightarrow{\alpha} \alpha^2 + m\alpha - 2m = 0 \Longrightarrow \alpha^2 = -m\alpha + 2m$

$\alpha^2 - m\beta = 8 \xrightarrow{\alpha^2 = -m\alpha+2m} -m\alpha + 2m - m\beta = 8 \longrightarrow -m(\underbrace{\alpha+\beta}_{S = -m}) + 2m - 8 = 0$

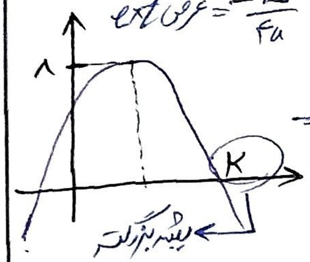
$S = \alpha+\beta = ?$

$\begin{cases} S = -m \\ P = -2m \end{cases} \Longrightarrow m^2 + 2m - 8 = 0 \longrightarrow (m+4)(m-2) = 0 \longrightarrow m = 2 \longrightarrow \Delta > 0$ ✓ ، $m = -4 \longrightarrow \Delta < 0$ غ ق ق ×

$\Longrightarrow m = 2 \longrightarrow S = \alpha+\beta = -m = \boxed{-2}$

8

$f(x) = mx^2 + 4x + \frac{m}{2} + 7$ — $\left(\frac{m^2}{2} + 7m\right)$



عرض ext $= \frac{-\Delta}{4a} = \frac{-(16 - 4(m)(\frac{m}{2}+7))}{4m} = \frac{-16 + 2m^2 + 28m}{4m} = \frac{m^2 + 14m - 8}{2m} = 8$

$\Longrightarrow m^2 + 14m - 8 = 16m \longrightarrow m^2 - 2m - 8 = 0 \longrightarrow (m-4)(m+2) = 0$

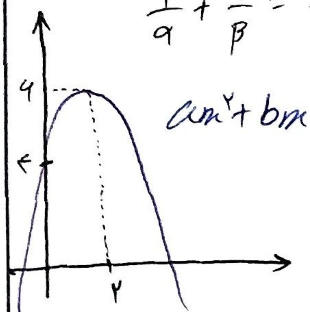
معادله:

$m = 4 \longrightarrow 4x^2 + 4x + 9 \longrightarrow$ × غ ق ق $\times \longrightarrow \Delta < 0$

$m = -2 \longrightarrow -2x^2 + 4x + 6 \xrightarrow{m=-2}$ ریشه ها $= x = \frac{-4 \pm \sqrt{16+48}}{-4}$ → -1 ، $3 \longrightarrow$ ریشه بزرگتر $= K$

9

$\frac{1}{\alpha} + \frac{1}{\beta} = ?$ (مخرج مشترک) $\longrightarrow \frac{\alpha+\beta}{\alpha\beta} = \frac{S}{P} = \frac{-\frac{b}{a}}{\frac{c}{a}} = \frac{-b}{c} = ? \longrightarrow \boxed{\frac{-2}{4} = -\frac{1}{2}}$



$ax^2 + bx + c \longrightarrow \begin{cases} c = 4 & \text{عرض از مبداء} \\ \frac{-b}{2a} = 2 \longrightarrow -b = 4a \\ \frac{-\Delta}{4a} = \frac{b^2 - 4ac}{-4a} = 6 \longrightarrow b^2 - 4ac = -24a \xrightarrow{-b=4a} b^2 + bc = 6b \end{cases}$

$b(b+c) = 6b$

$\Longrightarrow \begin{cases} b + c = 6 \\ c = 4 \end{cases} \longrightarrow b = 2 \Longrightarrow \boxed{\frac{-b}{c} = \frac{-2}{4} = -\frac{1}{2}}$

10

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

یکی از ریشه ها $= 2 \longrightarrow$ * ۲ باید این معادله را صفر کند *

$\longrightarrow x = 2 \longrightarrow 4 - 8a - 8 + 3a^2 + 6a + 3 = 0 \longrightarrow 3a^2 - 2a - 1 = 0 \longrightarrow a^2 - 2a - 3 = (a-3)(a+1)$

$\Longrightarrow \begin{cases} a = 3/3 = 1 \\ a = -1/3 = -\frac{1}{3} \end{cases}$

تکمیل معادله $\longrightarrow \begin{cases} a = 1 \longrightarrow x^2 - 8x + 12 \longrightarrow ✓ \\ a = -\frac{1}{3} \longrightarrow x^2 - \frac{14}{3}x + 2 \longrightarrow x = \frac{\frac{14}{3} \pm \sqrt{\frac{256}{9} - 8}}{2} \end{cases}$ → $\frac{2}{3}$ ، 2 → ریشه دیگر

$\Longrightarrow x^2 - 8x + 12 \longrightarrow$ ریشه ها $\longrightarrow x = \frac{8 \pm \sqrt{64-48}}{2} = \frac{8 \pm 4}{2}$ → 2 ، $6 \longrightarrow$ ریشه دیگر $= 6$