نام و نام خانوادگی .... پاسخنامه تشریحی تکلیف شماره ...۳... کلاس ....

۱	$y=(a-1)x^2+x+c$ محور تقارن $x=2 \to \frac{-b}{2a}=2 \to \frac{-1}{2a-2}=2 \to 4a-4=-1 \to 4a=3 \to a=\frac{3}{4}$ $y=\frac{-1}{4}x^2+x+3$ $\frac{-1}{4}x^2+x+3=0 \xrightarrow{\times -4} x^2-4x-12=0$ $(x-6)(x+2)=0$ $x=6 \to$ در این طول مثبت قطع می‌کند $\quad x=-2$
۲	$f(x)=mx^2-5x+m$ $x \quad x_1 \quad x_2$; $f(x)$: $- \quad + \quad -$ (هم علامت ضریب x^2) $\to m<0$ دو ریشه دارد $\to \Delta>0 \to 25-4(m)(m)>0 \to 25>4m^2 \to \frac{25}{4}>m^2 \to \frac{5}{2}>m>\frac{-5}{2}$ $\frac{-5}{2}<m<0$
۳	$\frac{3-\sqrt{5}}{2}, \frac{3+\sqrt{5}}{2}$ $S=\frac{3-\sqrt{5}}{2}+\frac{3+\sqrt{5}}{2}=\frac{6}{2}=3$ $P=\left(\frac{3-\sqrt{5}}{2}\right)\left(\frac{3+\sqrt{5}}{2}\right)=\frac{9-5}{4}=1$ $x^2-Sx+P \to x^2-3x+1=0$
۴	$2x^2-8x+m+2=0$ $\alpha+\beta=\frac{-b}{a}=\frac{8}{2}=4 \quad \alpha\beta=\frac{c}{a}=\frac{m+2}{2} \quad \lvert\alpha-\beta\rvert=\frac{\sqrt{64-4(m+2)(2)}}{2}$ ($\frac{\sqrt{\Delta}}{\lvert a\rvert}$) $3\alpha^2+\beta^2=12 \to 2\alpha^2+\beta^2+\alpha^2-\beta^2=12 \to 2(\alpha^2+\beta^2)+(\alpha-\beta)(\alpha+\beta)=12 \to 2\left(4^2-2\left(\frac{m+2}{2}\right)\right)+(4)\left(\frac{-\sqrt{48-8m}}{2}\right)$ (منفی) $=28-2m-2\sqrt{48-8m}=12 \to 14-m-\sqrt{48-8m}=6 \to \sqrt{48-8m}=8-m \xrightarrow{8>m} 48-8m=64-16m+m^2$ $\to m^2-8m+16=0$ $(m-4)^2=0 \to m=4$
۵	$S(2,9)$, $c=5$ عرض از مبدأ $\to y=a(x-h)^2+k=a(x-2)^2+9 \xrightarrow{x=0} 4a+9=5 \to a=-1$ (عرض از مبدأ طول ۰) $\Rightarrow y=-1(x-2)^2+9=-x^2+4x-4+9=-x^2+4x+5$ بالای محور x: $-x^2+4x+5>0 \to x^2-4x-5<0 \to (x-5)(x+1)<0$ $-1 \quad 5$: $+ \quad - \quad +$ $\to$ در بازه $(-1,5)$ بالای محور x

۶

$x^2 - 7x + 9\beta = 0$

$\alpha \cdot \beta = \frac{9\beta}{\alpha} \xrightarrow{\beta \neq 0} \alpha^2 = 9 \to \alpha = \pm 3$

$\alpha + \beta = \frac{7}{\alpha}$ ، $\alpha = 3$: $3 + \beta = \frac{7}{3} \to \beta = -\frac{2}{3}$ ✗

$\alpha = -3$: $-3 + \beta = -\frac{7}{3} \to \beta = \frac{9}{3} - \frac{7}{3} = \frac{2}{3}$

$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{1}{-3} + \frac{1}{\frac{2}{3}} = \frac{-1}{3} + \frac{3}{2} = \frac{-2+9}{6} = \frac{7}{6}$

۷

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

$\alpha + \beta = \frac{-b}{a} = -m$

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

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

$(m+4)(m-2) = 0$ ، $m = 2$ ق ق ، $m = -4$ غ ق ق

شرط: Δ: $m^2 - 4(-2m) > 0 \to m^2 + 8m > 0$

$-8 \quad 0$: $+ \mid - \mid +$ $\to m = 2$ قابل قبول

$x^2 + 2x - 4 = 0 \to \alpha + \beta = -2$

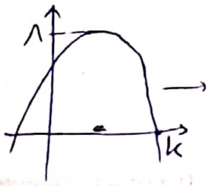
۸

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

$\frac{-\Delta}{4a} = 8 \to \frac{-(16 - 4(\frac{m}{2}+7)(m))}{4m} = 8 \to 2m^2 + 28m - 16 = 32m$ ، ($-2m^2 - 28m$)

$m^2 + 14m - 8 = 16m$

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



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

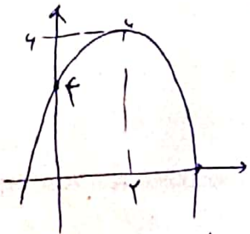
$-2x^2 + 4x + 6 = 0 \to x^2 - 2x - 3 = 0$

$(x-3)(x+1) = 0$

$k = 3 \leftarrow x = 3$ ، $x = -1$

۹

$f(x) = a(x-h)^2 + k = a(x-2)^2 + 6 \xrightarrow{x=0} 4a + 6 = 4 \to a = \frac{-1}{2}$ (عرض از مبدا)



$f(x) = \frac{-1}{2}(x-2)^2 + 6 = \frac{-x^2}{2} + 2x - 2 + 6 = \frac{-x^2}{2} + 2x + 4$

$\frac{-x^2}{2} + 2x + 4 = 0 \to \alpha + \beta = \frac{-2}{\frac{-1}{2}} = 4$

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

$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha \cdot \beta} = \frac{4}{-8} = \frac{-1}{2}$ (صفرهای تابع)

۱۰

$x^2 - (4a+4)x + (3a^2 + 6a + 3) = 0 \xrightarrow{x=2} 4 - 8a - 8 + 3a^2 + 6a + 3 = 0$

$\to 3a^2 - 2a - 1 = 0$

$a^2 - 2a - 3$

$(a-3)(a+1)$

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

$a = \frac{-1}{3}$: $x^2 - \frac{8}{3}x + \frac{4}{3} = 0 \to (x-2)(x - \frac{2}{3}) = 0$ ، $x = \frac{2}{3}$ ریشه دیگر

$a = 1$: $x^2 - 8x + 12 = 0 \to (x-2)(x-6) = 0 \to x = 6$ ریشه دیگر