نام و نام خانوادگی ....فرناز صالحی.... پاسخنامه تشریحی تکلیف شماره ۲۳.... کلاس ....دهم (روز جمعه)....

۱

$f(x) = a(x-x_0)^2 + y_0 \to f(x) = a(x+1)^2 + 9$

$1 = a(4)^2 + 9 \to 1 = 16a + 9 \to a = -\frac{1}{2}$

$f(x) = -\frac{1}{2}(x+1)^2 + 9 \;=\; f(x) = -\frac{1}{2}x^2 - x + \frac{17}{2}$

۲

۲ ریشه منفی $\to \Delta > 0 \,/\, S \to - \,/\, P \to +$ / $\Delta \Rightarrow m^2 - 4(2\times(m+6)) > 0 \to m^2 - 8m - 48 > 0$

$(m+4)(m-12) > 0$

$\boxed{m < -4 \text{ و } m > 12}$

$S \to -\frac{b}{a} \to -\frac{m}{2} > 0 \to -m > 0 \to \boxed{m<0} \to -6 < m < 0$

$P \to + \to \frac{c}{a} > 0 \to \frac{m+6}{2} > 0 \to m+6>0 \to \boxed{m > -6}$

در اشتراک بین همه $\Rightarrow -6 < m < -4$:جواب

۳

$-\frac{b}{a} = \frac{1}{\frac{c}{a}} \to -\frac{b}{a} = \frac{a}{c} \to a^2 = -b \times c \to 9 = (-2m+1)\times(2-m) \to 9 = -4m + 2m^2 + 2 - m$

$(m+\frac{2}{2})(2m-7) = 0$ ریشه $2m^2 - 5m - 7 = 0$

دو ریشه $\to \Delta \geq 0 \to$ در Δ قرار می‌دهیم $x = \frac{7}{2}$ و $m = -1$

$m = -1$ ✓

$m = \frac{7}{2}$ ✗ ← جواب

می‌بینیم که هر ۲ قابل قبول هستند چون بزرگتر یا برابر صفر می‌شود.

$\Delta \geq 0 \to 4m^2 + 8m - 32 \geq 0 \to \Delta = 432 \to x = \frac{-2 \pm 3\sqrt{3}}{2}$

$m \geq \frac{-2+3\sqrt{3}}{2}$ ، $m \leq \frac{-2-3\sqrt{3}}{2}$ جواب‌ها

۴

$x = x^2 - 4 \to x^2 - 4 - x = 0 \to S = -\frac{b}{a} \to (1)$ ، $P = \frac{c}{a} \to (-4)$ | $x_2^3 + \frac{1}{x_1}$ ، $x_1^3 + \frac{1}{x_2}$ خروجی‌ها $-\frac{x_1}{4}$

$\frac{1}{x_1} = \frac{x_2}{x_1 x_2} = \frac{-x_2}{4}$

$S' \to x_2^3 - \frac{x_2}{4} + x_1^3 - \frac{x_1}{4}$ ، $\frac{-(x_2+x_1)}{4} = -\frac{1}{4}$ ، $13 - \frac{1}{4} = \frac{51}{4}$ مجموع جدید

$x_1^3 + x_2^3 \to S^3 - 3PS \to 1 - 3(-4)(+1) = +13$

حاصلضرب $\to x_1^3 \times x_2^3 + x_2^3 \frac{1}{x_2} + x_1^3 \frac{1}{x_1} + \frac{1}{x_1 x_2} \xrightarrow{\text{ساده}} \underbrace{(x_1x_2)^3}_{(-4)^3 = -64} + \underbrace{x_2^2 + x_1^2}_{S^2-2P \to 1+8=9} + \frac{1}{x_1x_2} \to -\frac{1}{4}$ حاصلضرب جدید $\Rightarrow \frac{-231}{4}$

$x^2 - Sx + P = 0$

$x^2 - \frac{51}{4}x - \frac{231}{4} = 0$

$= 4x^2 - 51x - 231 = 0$ جواب

۵

$\sqrt[3]{x} = t \to (t^2 + \frac{1}{t^2} + 1)(t^2 - 1) = 2t$ ضرب (پخش) دو براکت $t^2(t^2-1) + \frac{1}{t^2}(t^2-1) + 1(t^2-1) = 2t$

$t^4 - t^2$ ، $1 - \frac{1}{t^2}$ ، $t^2 - 1$ $= t^4 - \frac{1}{t^2}$

$\times t^2$ از بین رفتن مخرج

$x = \frac{2 \pm \sqrt{4+4}}{2} \leftarrow x^2 - 2x - 1 = 0 \leftarrow t^6 - 2t^3 - 1 = 0 \leftarrow t^6 - 1 = 2t^3$

$\to x = 1 \pm \sqrt{2}$ زیرا $\sqrt[3]{x} = t$ پس $x = t^3$

$x_1 + x_2 \to 1 + \cancel{\sqrt{2}} + 1 - \cancel{\sqrt{2}} = 2$

جواب

$S \to -\frac{b}{a} \to +\frac{a}{3}$ / $3x^2 + 4 - ax = 0 \to x_1,\ x_2 = 3x_1$

$\to 4x_1 = \frac{a}{3} \to a = 12x_1$

$P \to \frac{c}{a} \to \frac{4}{3} \to x_1 \times 3x_1 = \frac{4}{3} \to 3x^2 = \frac{4}{3} \to x^2 = \frac{4}{9} \to \boxed{x = \pm\frac{2}{3}}$ ۶

$x_1 = \frac{2}{3} \to 12 \times \frac{2}{3} = +8$

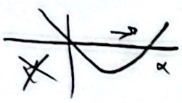
$x_2 = -\frac{2}{3} \to 12 \times -\frac{2}{3} = -8$

$8 - (-8) = 16$

جواب

$y = x(ax + (3 + 2a)) = 0$

$ax + (3 + 2a) = 0 \to x = \frac{-3 - 2a}{a} > 0$ ۷



a منفی

$y = -x^2 - 2x + b \to = \frac{2}{-2} = -1$ / $x^2 + ax - 2 = y$

$-\frac{a}{2} = -1 \to a = 2$

$a \times b = 2 \times 4 = 8$

۳ جواب ۸

$x^2 + 2x - 3 = 0 \to x_1 = 1,\ x_2 = -3$

$-1 - 2 + b = 1 \to b = 4$

$-9 + 6 + b = 1 \to b = 4$

$2x^2 - ax + b = 0$ (x_1, x_2) / $2ax^2 + ax - 6 = 0$ (y_1, y_2), $x_1 = y_1 + \frac{1}{2}$, $x_2 = y_2 + \frac{1}{2}$

$S \to x_1 + x_2 = \frac{a}{2}$; $S' \to y_1 + y_2 \to -\frac{a}{2a} = -\frac{1}{2}$

$P \to x_1 \times x_2 = \frac{b}{2}$; $P' \to y_1 \times y_2 \to \frac{-6}{2a} = \frac{-3}{a}$

$x_1 + x_2 = y_1 + y_2 + \cancel{2} \times \frac{1}{\cancel{2}} \to \frac{a}{2} = -\frac{1}{2} + 1 \to \boxed{a = 1}$ ($\frac{1}{2}$) ۹

$x_1 \times x_2 = (y_1 + \frac{1}{2})(y_2 + \frac{1}{2}) \to y_1 y_2 + \frac{1}{2}(y_1 + y_2) + \frac{1}{4} \to -3 + \frac{1}{2}(-\frac{1}{2}) + \frac{1}{4} = -3$

$-\frac{3}{a} = -\frac{3}{1} = -3$; $y_1 + y_2 = -\frac{1}{2}$

$x_1 \times x_2 = -3 = \frac{b}{2} \to \boxed{b = -6}$

$\left[\frac{-6 \times 1}{4}\right] = -2$ ← جواب

$a^2 + 6a + m = 0$

$a^2 + 2a - 3m = 0$

$\to a^2 + 6a + m = a^2 + 2a - 3m \to \boxed{m = -a}$

$a^2 + 6a + m = 0 \to a^2 + 6a - a = 0 \to a^2 + 5a = 0 \to a = 0$ غ ق ق ، $a = -5$ $\to \boxed{m = 5}$ ۱۰

$x^2 + 6x + m = 0 \to x^2 + 6x + 5 = 0 \to (x+1)(x+5) = 0$

$x^2 + 2x - 3m = 0 \to x^2 + 2x - 15 = 0 \to (x-3)(x+5) = 0$

ریشه‌های غیرمشترک $\to -1, 3 \to 3 - (-1) = 4$

جواب