

پاشنامه تشریحی تکلیف شماره ... «۱۳» ... کلاس یازدهم B زمهره «ریاضی امانی»

محورهای دایره را در تمام طول مستقیم قطع؟
 $g = (a-1)x^2 + x + 3$ معادله $x=2$
 $-\frac{b}{2a} = 2 = 2 - \frac{1}{2a-2} = \frac{1}{-2a+2} = 2 = 2 - 2a + 2 = 1 - 2a = -2 = 2a = \frac{3}{2}$
 $a = a-1 = \frac{3}{2} - 1 = -\frac{1}{2}$
 $\Delta = 1 - 4(-\frac{1}{2})(3) = 1+3=4$
 $-\frac{b \pm \sqrt{\Delta}}{2a} = \frac{-1 \pm \sqrt{4}}{-1} = \begin{cases} \frac{-1+2}{-1} = +1 \\ \frac{-1-2}{-1} = -1 \end{cases}$ جواب

$f(x) = mx^2 - \omega x + m$ و $m > 0$
 $\Delta = \omega^2 - 4m^2 > 0 = \omega^2 > 4m^2 = \omega > \frac{2a}{2} > m$
 $= \omega - \frac{\omega}{2} < m < \frac{\omega}{2} \Bigg\} \begin{matrix} n=2 \\ m > 0 \end{matrix} \Rightarrow 0 < m < \frac{\omega}{2} = (0, \frac{\omega}{2})$

$\frac{3-\sqrt{5}}{3}, \frac{3+\sqrt{5}}{3}$
 $\Delta = b^2 - 4ac = 9 - 4 \times \frac{3}{2} \times C = \omega \Rightarrow 9 - 4C = \omega = 2 \times C = 2 \times C = \frac{2}{3}$
 $b = -3, S = 2$
 $\Delta = \omega, P = \frac{4}{9}$
 $a = \frac{3}{2}$
 $C = \frac{2}{3}$
 $-\frac{b \pm \sqrt{\Delta}}{2a} = \frac{3 \pm \sqrt{5}}{3}$
 $\frac{3}{2}x^2 - 3x + \frac{2}{3} = 0 \Rightarrow 9x^2 - 18x + 4 = 0$

α, β ریشه‌های $2x^2 - 18x + m + 2 = 0$ $\alpha < \beta$ $3\alpha^2 + \beta^2 = 12$ $m = ?$
 $\alpha + \beta = -\frac{b}{a} = +9 \Rightarrow \beta = 9 - \alpha \Rightarrow \beta = 3$ $S = 3+1=4$ $P = 3 \times 1 = 3$
 $3\alpha^2 + \beta^2 = 12 \Rightarrow 3\alpha^2 + (9 - \alpha)^2 = 12 \Rightarrow 3\alpha^2 + 81 - 18\alpha + \alpha^2 = 12$
 $\Rightarrow 4\alpha^2 - 18\alpha + 69 = 0 \Rightarrow 4\alpha^2 - 2\alpha + 1 = 0 \Rightarrow (\alpha - 1)^2 = 0 \Rightarrow \alpha = 1$
 $x^2 - 5x + p = 0 \Rightarrow x^2 - 4x + 3 = 0 \Rightarrow 2x^2 - 18x + 4 = 0 \Rightarrow m + 2 = 4 \Rightarrow m = 2$

نقطه‌های رأس سیمی $S(2, 9)$ محور عرض‌ها را در نقطه‌ای به عرض ۵ قطع، در تمام بازه این سیمی در بالای محور قرار دارد.
 $y = a(x-h)^2 + k$ (۵ و ۵) $y = -1(x-2)^2 + 9$
 $y = a(x-2)^2 + 4$ $\Rightarrow y = -x^2 + 4x + 5$
 $\omega = a(-2)^2 + 4$ $\Rightarrow y = -(x^2 - 4x - 5)$
 $\Rightarrow \omega = 4a + 4 = 2a - 4 \Rightarrow a = -1$ $\Rightarrow y = -(x-5)(x+1)$
 $a < 0 \Rightarrow \max$

$\alpha, \beta \xrightarrow{\text{نسبت}}$ $\alpha x^2 - vx + 9\beta = 0$ $(\beta \neq 0)$ $\frac{1}{\alpha} + \frac{1}{\beta} = ?$ $\frac{\alpha + \beta}{\alpha\beta}$
 $x = \alpha \Rightarrow \alpha^3 - v\alpha + 9\beta = 0 \Rightarrow 9\beta = v\alpha - \alpha^3 \Rightarrow \frac{-11}{\alpha} = v\alpha - \alpha^3 \Rightarrow -11 = v\alpha^2 - \alpha^4 \Rightarrow \alpha^4 - v\alpha^2 - 11 = 0$
 $x = \beta \Rightarrow \alpha\beta^2 - v\beta + 9\beta = 0 \Rightarrow \alpha\beta^2 + 4\beta = 0 \Rightarrow \beta(\alpha\beta + 4) = 0 \Rightarrow \alpha\beta = -4 \Rightarrow \beta = -\frac{4}{\alpha}$
 $\Rightarrow t^2 - vt - 11 = 0 \Rightarrow t = \frac{v \pm 11}{2} = \begin{cases} 9 \\ -1 \end{cases} \times \frac{1}{\alpha} \Rightarrow \alpha^2 = 9 \Rightarrow \alpha = \pm 3 \Rightarrow \begin{cases} \alpha = 3 & \beta = -\frac{4}{3} \\ \alpha = -3 & \beta = \frac{4}{3} \end{cases}$
 $\Delta = 49 + 44 = 93$
 $\frac{\alpha + \beta}{\alpha\beta} = \frac{-\frac{4}{\alpha}}{-4} = \frac{1}{\alpha}$

$\alpha, \beta \xrightarrow{\text{نسبت}}$ $x^2 + mx - 2m = 0$ $\alpha^2 - m\beta = 1$ $S = \alpha + \beta = ?$ $-\frac{b}{a} = -m$
 $\alpha^2 + \alpha m - 2m = 0 \Rightarrow \alpha^2 = -\alpha m + 2m$ $P = \frac{c}{a} = -2m$
 $\alpha^2 - m\beta = 1 \Rightarrow -m\alpha + 2m - m\beta = 1 \Rightarrow -m(\alpha + \beta) + 2m = 1$
 $\Rightarrow m^2 + 2m = 1 \Rightarrow m^2 + 2m - 1 = 0$ $\Delta = 4 + 4 = 8$ $m = \frac{-2 \pm \sqrt{8}}{2} = \begin{cases} -1 \\ +1 \end{cases}$
 $m = -1 \Rightarrow S = -m = 1$
 $m = +1 \Rightarrow S = -m = -1$

$f(x) = \frac{m}{a}x^2 + \frac{f}{b}x + \frac{m}{c} + v$ $K = ? \Rightarrow K = +1$
 $-\frac{\Delta}{4a} = 1$
 $-\frac{b^2 - 4ac}{4a} = 1 \Rightarrow -b^2 + 4ac = 4a$
 $\Rightarrow -14 + f(m)(\frac{m}{v} + v) = 4m \Rightarrow 4m^2 - 4m - 14 = 0$
 $\Delta = 14 + 112 = 126$ $\frac{f \pm \sqrt{126}}{f} = \begin{cases} m = 4 \\ m = -1 \end{cases}$
 $\Rightarrow$ $\text{بما أن } a < 0 \Rightarrow m = -1$
 $-2x^2 + 4x + 4 = f(x) \Rightarrow \Delta = 14 + 16 = 30$ $\frac{-4 \pm \sqrt{30}}{-2} = \begin{cases} x = +1 \\ x = -1 \end{cases}$

$\frac{1}{1-2\sqrt{a}} + \frac{1}{1+2\sqrt{a}} = \frac{1+2\sqrt{a}+1-2\sqrt{a}}{1-4a} = \frac{2}{1-4a} = -\frac{1}{14}$
 $C = f$ $-\frac{b}{a} = 2 \Rightarrow -b = 2a \Rightarrow b = -2a \Rightarrow b = -\frac{1}{2} \times \frac{f}{1} = -\frac{f}{2}$
 $-\frac{\Delta}{4a} = 4 \Rightarrow -\frac{b^2 - 4ac}{4a} = 4 \Rightarrow -b^2 + 4ac = 16a$
 $\Rightarrow -14a^2 + 14a - 2fa = 0 \Rightarrow -14a^2 - 14a = 0$
 $\Rightarrow a(-14a - 14) = 0 \Rightarrow \begin{cases} a = 0 \times \\ a = -1 \end{cases}$
 $-\frac{1}{2}x^2 + 2x + f = 0 \Rightarrow -x^2 + 4x + 14 = 0$ $\Delta = 14 + 14 = 28$ $\frac{-4 \pm \sqrt{28}}{-2} = \begin{cases} x = 1 + \sqrt{7} \\ x = 1 - \sqrt{7} \end{cases}$

$x^2 - (fa + f)x + (4a^2 + 4a + 1) = 0$
 $x = 2 \Rightarrow 4a^2 - 4a - 1 = 0$ $\Delta = b^2 - 4ac > 0 \Rightarrow 14a^2 + 4a + 1 - 14a^2 - 2fa - 14a^2 = 0$
 $\Delta = b^2 - 4ac = 14$ $a = \frac{+1 \pm f}{4} \Rightarrow a = \begin{cases} +1 \\ -\frac{1}{4} \end{cases}$
 $\Rightarrow \begin{cases} a = 1 \Rightarrow S = -\frac{b}{a} = 1 \Rightarrow 1 - 2 = -1 \\ a = -\frac{1}{4} \Rightarrow S = -\frac{b}{a} = \frac{1}{4} \Rightarrow \frac{1}{4} - 2 = -\frac{7}{4} \end{cases}$