

نسبت به خط $x=2$ متناظر، محور x ها را به نی طولی قطع؟
 $ax^2 + x + 3 = y = (a-1)x^2 + x + 3$
 $ax^2 + x + 3 = (a-1)x^2 + x + 3$
 $ax^2 + x + 3 = ax^2 - x^2 + x + 3$
 $0 = -x^2$
 $x^2 = 0$
 $x = 0$
 $\Delta = 1 + 12 = 13$
 $x = \frac{-1 \pm \sqrt{13}}{-2}$
 $x_1 = \frac{-1 + \sqrt{13}}{-2}$
 $x_2 = \frac{-1 - \sqrt{13}}{-2}$

$f(x) = mx^2 - 2x + m$
 $\Delta > 0$
 $4 - 4m^2 > 0$
 $1 - m^2 > 0$
 $(1 - m)(1 + m) > 0$
 $1 - m > 0$
 $m < 1$
 $1 + m > 0$
 $m > -1$
 $-1 < m < 1$
 $\Rightarrow m \in (-1, 1)$

نسبت به خط $x=2$ متناظر، محور x ها را به نی طولی قطع؟
 $S = \frac{3 - \sqrt{5}}{2}, \frac{3 + \sqrt{5}}{2}$
 $S = \frac{3 - \sqrt{5} + 3 + \sqrt{5}}{2} = \frac{6}{2} = 3$
 $y = x^2 - 2x + \frac{1}{4} \Rightarrow y = x^2 - 1x + \frac{1}{4}$
 $\rho = \frac{3 + \sqrt{5}}{2}, \frac{3 - \sqrt{5}}{2} = \frac{9 - 5}{4} = \frac{4}{4} = 1$

نسبت به خط $x=2$ متناظر، محور x ها را به نی طولی قطع؟
 $\alpha + \beta = 2 \Rightarrow \beta = 2 - \alpha$
 $3\alpha^2 + (2 - \alpha)^2 = 12$
 $3\alpha^2 + 4 - 4\alpha + \alpha^2 = 12$
 $4\alpha^2 - 4\alpha - 8 = 0$
 $\alpha^2 - \alpha - 2 = 0$
 $(\alpha - 2)(\alpha + 1) = 0$
 $\alpha = 2$
 $\beta = 0$
 $\rho = 2$

نسبت به خط $x=2$ متناظر، محور x ها را به نی طولی قطع؟
 $y = ax^2 + bx + c$
 $4a + 2b + c = 9$
 $4a + 2b = 9 - c$
 $2a + b = \frac{9 - c}{2}$
 $(2, 9)$
 $\frac{-b}{2a} = 2$
 $-b = 4a$
 $-2a = 2 \Rightarrow a = -1$
 $-x^2 + (m + 2)x + c > 0$
 $\frac{-1}{-1} \frac{c}{-1} \Rightarrow (-1, c)$

$\frac{1}{\alpha} + \frac{1}{\beta} = 9$ جو α, β کے لیے $\alpha + \beta = 9$ اور $\alpha\beta = 9$ سے ملتا ہے۔

$\alpha\beta = 9 \Rightarrow \alpha = \frac{9}{\beta} \Rightarrow \alpha = \pm 3$

$\alpha = 3 \Rightarrow 3m^2 - 4m + 9\beta = 0 \Rightarrow 5 = \alpha + \beta = \frac{9}{\beta} \Rightarrow \beta = \frac{9}{5}$ $\checkmark$

$\alpha = -3 \Rightarrow -3m^2 - 4m + 9\beta = 0 \Rightarrow \frac{\alpha}{-\beta} + \beta = \frac{-4}{\beta} \Rightarrow \beta = \frac{4}{\beta} \checkmark$

$\frac{\alpha + \beta}{\alpha\beta} = \frac{-3 + \frac{9}{5}}{\frac{9}{5} \times -3} = \frac{-\frac{6}{5}}{-\frac{27}{5}} = \frac{2}{9} = \boxed{+\frac{2}{9}}$

$\beta^2 + m\beta - 4m = 0$
 $m\beta = 4m - \beta^2$

$\alpha^2 - 4m + \beta^2 = 1$
 $\alpha^2 + \beta^2 - 4m = 1$
 $5^2 - 4m = m^2 + 4m$

$m^2 + 4m - 1 = 0$
 $(m + 4)(m - 1) = 0$
 $m = -4, 1$

$\alpha^2 - m\beta = 1$ $\alpha^2 + m\alpha - 4m = 0$ سے α, β کے لیے

$m = 1 \Rightarrow n^2 + 4n - 1 = 0 \quad \Delta > 0 \quad \frac{-b}{a} = -4$

$m = -4 \Rightarrow n^2 - 4n + 1 = 0 \Rightarrow \Delta < 0 \quad \times$

$f(n) = mn^2 + 4n + \frac{m}{n} + 4$

$\frac{-\Delta}{4a} = 1 \quad \frac{4ac - b^2}{4a} = \frac{4m^2 + 41m - 14}{4m} = 1$

$4m^2 + 41m - 14 = 4m$
 $4m^2 - 4m - 14 = 0$
 $m^2 - m - 3.5 = 0$
 $(m - 1)(m + 4) = 0$
 $m = 1, -4$

$m = 1 \Rightarrow 4n^2 + 4n + 4 \Rightarrow \Delta < 0$
 $m = -4 \Rightarrow -4n^2 + 4n + 4 \Rightarrow \Delta > 0$
 $4n^2 + 4n - 14 = 0 \quad (n + 4)(n - 1) = 0$
 $n = -1, 4$

$\frac{1}{\alpha} + \frac{1}{\beta} = 9$

$ax^2 + bx + c = 0$
 $\frac{-b}{2a} = r \Rightarrow 4a = -b$

$(r, 4) \Rightarrow 4a + 4b + 4 = 9 \quad 4a + \frac{b}{4} = 1 \Rightarrow -4a = 1$
 $a = -\frac{1}{4}$
 $b = 1$

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

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

$x = 1 \Rightarrow 1 - 4a - 4 + 4a^2 + 4a + 4 = 0$
 $4a^2 - 4a - 1 = 0$
 $(a + 4)(a - 1) = 0 \Rightarrow a = 1, a = -\frac{1}{4}$

$a = 1 \Rightarrow x^2 - 8x + 12 = 0 \quad \Delta > 0 \quad (x - 2)(x - 6) = 0 \quad x = 2, 6$

$a = -\frac{1}{4} \Rightarrow x^2 - \frac{1}{2}x + \frac{15}{4} = 0 \quad \Delta = \frac{1}{4} - 15 = -14.75 < 0$
 $x = \frac{\frac{1}{2} \pm \sqrt{-14.75}}{2} \Rightarrow x = \left(\frac{1}{4} \pm \frac{\sqrt{14.75}}{2}\right), 2$