۱

$x^2 - 4x - 12 = 0$

$(x-6)(x+2) = 0$

$x = 6$ ✓

$x = -2$

$\frac{-b}{2a} = 2$ $\quad 4a - 4 = -1$ $\quad 4a = 3$ $\quad a = \frac{3}{4}$

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

$\frac{3}{4} - 1 = \frac{1}{4}$

$\frac{-1}{4} x^2 + x + 3 = 0$

$-x^2 + 4x + 12 = 0$

۲

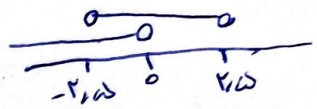
$\Delta > 0$ $\quad a < 0$ $\quad b^2 - 4ac > 0$ $\quad m < 0$

$20 - 4m^2 > 0$

$20 > 4m^2$

$\frac{20}{4} > m^2$

$\frac{-5}{2} < m < \frac{5}{2}$



$m = (-2,5 , 0)$

۳

$x^2 - 5x + 6 =$

$\frac{3 - \sqrt{5}}{3} + \frac{3 + \sqrt{5}}{3} = 2$

$\frac{3 - \sqrt{5}}{3} \times \frac{3 + \sqrt{5}}{3} = \frac{4}{9}$

$x^2 - 2x + \frac{4}{9}$

۴

$2\alpha^2 + \alpha^2 + 2\beta^2 - 13^2 = 2(\underbrace{\alpha^2 + \beta^2}_{14-m}) + \underbrace{\alpha^2 - \beta^2}_{(\alpha+\beta)(\alpha-\beta)}$

$\alpha^2 - B^2 = 5^2 - 2P = 19 - m - 2 = 14 - m$

$S = 4$

$P = \frac{m+2}{2}$ $\quad (\alpha+\beta)(\alpha-\beta) = -4\sqrt{12-2m}$

$4 \quad -\sqrt{12-2m}$

$m = 4$

$12 = 28 - 2m - 4\sqrt{12-2m}$

۵

$\begin{bmatrix} 2 \\ 9 \end{bmatrix}$ $\quad \begin{bmatrix} 0 \\ 5 \end{bmatrix}$ $\quad ax^2 + bx + c$

$ax^2 + bx + 5$

$\frac{-b}{2a} = 2$

$-4a = b$

$ax^2 - 4ax + 5$

$4a - 8a + 5 = 9$

$-4a = 4$

$a = -1$

$x^2 - 4x - 5 = 0$

$(x-5)(x+1) = 0$

$x = 5 \quad x = -1$

$(-1, 5)$

$-x^2 + 4x + 5$

$$\frac{\alpha+\beta}{\alpha\beta} = \frac{\frac{7}{\alpha}}{\frac{9\beta}{\alpha}} = \frac{7}{9\beta}$$

$\frac{9\beta}{\alpha} = -2$

$-2\alpha = 9\beta$

$9\beta = -2 \times -3$

$9\beta = 6$

$\frac{7}{9\beta} = \boxed{\frac{7}{6}}$

$\alpha^3 - 7\alpha + 9\beta = 0$

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

$\alpha\beta^2 + 2\beta = 0$

$\beta(\alpha\beta + 2) = 0$

$\alpha\beta + 2 = 0$

$\alpha\beta = -2$

$\alpha^3 - 9\alpha = 0$

$\alpha(\alpha^2 - 9) = 0$

$\alpha = 0$ ✗

$\alpha = 3$ ✗ β منفی باید باشد

$\alpha = -3$ ✓

6

$\alpha^2 + m\alpha - 2m = 0$

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

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

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

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

$S^2 - 2P$

$m^2 + 4m - 2m - 8 = 0$

$m^2 + 2m - 8 = 0$

$(m+4)(m-2) = 0$

$m = -4$

$m = 2$

$x^2 - 4x + 8 = 0$

$x^2 + 2x - 4 = 0$

$S = 4$

$S = -2$

7

$\frac{4ac - b^2}{4a} = 8$

$\frac{2m^2 + 28m - 16}{4m} = 8$

$2m^2 + 28m - 16 = 32m$

$2m^2 - 4m - 16 = 0$

$m^2 - 2m - 8 = 0$

$(m-4)(m+2) = 0$

$m = 4$ ✗

$m = -2$ ✓

$-2x^2 + 4x + 6 = 0$

$-x^2 + 2x + 3 = 0$

$x^2 - 2x - 3 = 0$

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

$\boxed{x = 3 = k}$

$x = -1$

8

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

$\frac{-b}{2a} = 2$

$b = -4a$

$ax^2 + bx + c$, $c = 4$

$ax^2 + bx + 4$

$ax^2 - 4ax + 4$

$x = 2$ $\quad 4a - 8a + 4 = 6$

$-4a = 2$

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

$= \frac{-1}{2}x^2 + 2x + 4$

$\frac{\alpha+\beta}{\alpha\beta} = \frac{4}{-8} = \frac{-4}{8}$

9

$4 - 8a - 8 + 3a^2 + 6a + 3 = 0$

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

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

$x^2 - 8x + 12 = 0$

$(x-6)(x-2) = 0$

$\boxed{x = 2}$ $\boxed{x = 6}$

$x^2 - \frac{8}{3}x + \frac{4}{3} = 0$

$3x^2 - 8x + 4 = 0$

$x^2 - 8x + 12 = 0$

$\frac{6}{3} \quad \frac{2}{3}$

$\boxed{x = 2}$

$\boxed{x = \frac{2}{3}}$

10