سارینا شفیعی

تاریخ:

(1) $\frac{-b}{2a} = -1 \quad 2a = b$

$a = -2 \quad b = -4 \quad c = 31$

$\left.\begin{array}{l} 1 = 9a + 6a + c \\ 9 = a - 2a + c \end{array}\right\} \quad -8 = 16a \rightarrow a = -2$

(2) $2x^2 + mx + (m+6) = 0 \quad a = 2 \quad b = m$

$c = m+6$

$\Delta \geq 0 \rightarrow m^2 - 4(2)(m+6) \geq 0 \quad m^2 - 8m - 48 \geq 0$

$(m-12)(m+4) = 0 \quad m = 12 \quad m = -4$

$m \in (-\infty, -4] \cup [12, +\infty)$

$P > 0 \quad P = \frac{c}{a} \quad \frac{m+6}{2} > 0 \rightarrow m+6 > 0 \quad m > -6$

$S > 0 = \frac{-b}{a} \quad \frac{-m}{2} > 0 \quad -m > 0 \quad m < 0$

$\left.\begin{array}{l} m \leq -4 \ , m \geq 12 \\ m > -6 \\ m < 0 \end{array}\right\} \xrightarrow{\cap} -6 < m \leq -4 \quad m \in (-6, -4]$

(3) $3x^2 + x(2m-1) + (2-m) = 0 \quad a = 3 \quad b = 2m-1$

$c = 2-m$

$x_1 + x_2 = \frac{-b}{a} = \frac{-2m+1}{3} \qquad x_1 x_2 = \frac{2-m}{3}$

$x_1 + x_2 = \frac{1}{x_1 x_2} \qquad \frac{2m-1}{3} = \frac{3}{2-m}$

$-4m + 2m^2 + 2 - m = 9 \qquad 2m^2 - 5m - 7 = 0$

$m = \frac{5 \pm \sqrt{81}}{4} \qquad m = 7/2 \ ✓ \qquad m = -1 \rightarrow ✗$

(4) $x^2 - x - 4 = 0 \qquad x_1 + x_2 = 1 \qquad x_1 x_2 = -4$

$y_1 = x_2^2 + \frac{1}{x_1} \qquad y_2 = x_1^2 + \frac{1}{x_2} \qquad y^2 - Sy + P = 0$

$S = \underbrace{x_1^2 + x_2^2}_{13} + \underbrace{\frac{1}{x_1} + \frac{1}{x_2}}_{-1/4}$

$13 - 1/4 = 12 + 3/4$

۵) $x_1 + x_2$

$$\left(\sqrt[3]{x^2} + \frac{1}{\sqrt[3]{x^2}} + 1\right)\underbrace{\left(\sqrt[3]{x^2} - 1\right) = 2\sqrt[3]{x}}_{2\sqrt[3]{x}}$$

$$\left(x - 2 - \frac{1}{x} = 2\right) \times x$$

$$x_1 + x_2 = \frac{-b}{a} \qquad \underbrace{x^2 - 2x - 1 = 2x}_{4}$$

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۶) $x_1 = r\ ,\ x_2 = 3r$

$x_1 x_2 = 4/3 \qquad 3r^2 = 4/3 \qquad r^2 = 4/9 \qquad r = \pm 2/3$

$x_1 + x_2 = 4r = \frac{-b}{a} \qquad b = -a \qquad \frac{a}{3} \qquad 4r = a/3$

$a = 12r \qquad r = 2/3 \quad a = 8 \qquad r = -2/3 \qquad a = -8 \qquad 8(-(-8)) = 64$

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۷) $y = ax^2 + (3+2a)x$

$x < 0 \quad y \geq 0 \qquad a < -3/2 \qquad (2a+3)^2 > 0$

$a \neq -3/2 \xrightarrow{\text{اشتراک}} -3/2 < a < 0$

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۸) $-x^2 - 2x + b\ ,\ x^2 + 2x - 3$

$-1 - 2 + b = 1 \qquad \frac{-2}{2} = -1 \qquad 1 - 2 - 2 = -3$

$b = 4$

$x^2 + 2x - 3 = 1 \qquad x^2 + 2x - 3 = 0$

$ab = 8 \qquad (x+3)(x-1) = 0 \quad \rightarrow \quad -3, 1$

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۹) $2at^2 + at - 9 = 0 \qquad 2(t + 1/2)^2 - a(t + 1/2) + b = 0$

$2t^2 + (2-a)t + \frac{1-a}{2} + b = 2at^2 + at - 9 = 0$

$\frac{1-1}{2} + b = -9 \qquad b = -9$

$\left(\frac{ab}{4}\right) = \frac{-9}{4} = -\frac{3}{2}$

10

$\Sigma x = -\Sigma x \to x = -x$

$x^2 - 4x + m = 0 \quad m^2 = 25 \to m = 5$

$x^2 + 2x - 15 = 0$

$(x+5)(x-3) = 0 \to -5 , 3$

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

$x \to -5 , -1$

$3 - (-1) = 4$