

مسئله ۱

$$-\frac{b}{2a} = 2 \rightarrow \frac{1}{2-2a} = 2 \rightarrow \frac{1}{2(1-a)} = 2 \rightarrow \frac{1}{1-a} = 4 \rightarrow 1-a = \frac{1}{4} \rightarrow a = \frac{3}{4}$$

$$y = -\frac{1}{2}x^2 + x + \frac{3}{4} = -(x - \frac{1}{2})(x + \frac{3}{2}) \rightarrow x = \frac{1}{2} \text{ و } x = -\frac{3}{2}$$

ریشه ها

مسئله ۲

$$f(x) = mx^2 - 2x + m$$

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

۱) $B \cap C$

۲) $\Delta > 0 \rightarrow 4m^2 - 4(m)(m) = 4m^2 - 4m^2 = 0 = (0-2m)(0+2m)$

$$\frac{-2m}{+1} = \frac{2m}{+1}$$

$(-2, 0)$

مسئله ۳

$$S = x_1 + x_2 = \frac{x_1 \sqrt{a} + x_2 \sqrt{a}}{a} = 2$$

$$P = x_1 x_2 = \frac{(x_1 \sqrt{a})(x_2 \sqrt{a})}{a} = \frac{c}{a}$$

$$\rightarrow f(x) = x^2 - 2x + \frac{c}{a}$$

مسئله ۴

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

$$2a^2 + 3b^2 \rightarrow 2a^2 + a^2 + 2b^2 - b^2 \rightarrow 2(a^2 + b^2) + (a-b)(a+b)$$

$$\rightarrow 2(48 - m - 2) + (4)(\sqrt{48 - 14 - 11m}) \rightarrow 2(46 - m) + 4(\sqrt{34 - 11m})$$

$$\rightarrow 2(46 - m) + 4(\sqrt{34 - 11m}) = 12 \rightarrow \boxed{m = 2}$$

مسئله ۵

$$y = ax^2 + bx + c$$

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

$$\rightarrow ax^2 + bx + c \rightarrow ax^2 - 2ax + c \xrightarrow{\frac{1}{a}} x^2 - 2x + \frac{c}{a} = 9$$

$$\rightarrow -2a + 1 \rightarrow a = -1, b = 2$$

$$\rightarrow y = -x^2 + 2x + 9 \rightarrow (x+1) \rightarrow x \in (-1, 5)$$

$$ax^2 - vx + qB = 0$$

سوال 4

$$\rightarrow \frac{qB}{a} = aB \Rightarrow \frac{q}{a} = a \rightarrow q = a^2 \rightarrow a = \pm \sqrt{q}$$

$$\frac{v}{a} = a + B \rightarrow v = a^2 + aB \rightarrow a^2 + aB - v = 0 \rightarrow a^2 + aB - v = 0$$

$$aB + v = 0 \rightarrow B = -\frac{v}{a} \rightarrow \text{مقدار B منفی است}$$

$$a^2 - v = 0 \rightarrow a = \pm \sqrt{v} \rightarrow a = \sqrt{v} \rightarrow B = -\frac{v}{\sqrt{v}} = -\sqrt{v}$$

$$\frac{1}{a} + \frac{1}{B} = -\frac{1}{v} + \frac{v}{v} \rightarrow \frac{-1 + v}{v} = \boxed{\frac{v-1}{v}}$$

$$f(x) = mx^2 + (x + \frac{m}{x} + v) \rightarrow -\frac{v}{x} \rightarrow \frac{v}{m} = x_s$$

سوال 5

$$\rightarrow m(\frac{v}{m}) - \frac{1}{m} + \frac{m}{v} + v = 1 \rightarrow \frac{v}{m} - \frac{1}{m} + \frac{m}{v} + v = 1$$

$$-\frac{v}{m} + \frac{m}{v} + v = 1 \rightarrow \frac{-v + m + v^2}{vm} = 1$$

$$\rightarrow m^2 - vm - 1 = 0 \rightarrow (m-1)(m+1) = 0 \rightarrow m = 1 \text{ or } m = -1$$

$$\rightarrow -vm^2 + (m + v) = 0 \rightarrow (x-v)(x+1) = 0 \rightarrow \boxed{K=1}$$

$$a^2 - mB = 1 \rightarrow vm - ma - mB = 1 \rightarrow m(a+B-x) = 1$$

$$\rightarrow a^2 + ma - vm = 0 \rightarrow a^2 + m(a-v) = 0 \rightarrow -m(a-v) = 1$$

$$\rightarrow +m^2 + vm = 1$$

$$\rightarrow m^2 + vm - 1 = 0 \rightarrow (m+1)(m-1) = 0$$

$$\rightarrow x^2 + vx - 1 \rightarrow S = -\frac{b}{a} = \boxed{-v}$$

$$\left(\begin{array}{l} m = -1 \\ \Delta x = 0 \\ m = 1 \end{array} \right)$$

$$f(x) = ax^2 + bx + c \rightarrow ax^2 + bx + \frac{c}{a} \rightarrow ax^2 - \frac{b}{a}x + \frac{c}{a}$$

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

Scanned with

$$a = -\frac{1}{x}, b = 2 \rightarrow -\frac{1}{x}x^2 + 2x + 1 \rightarrow \frac{1}{a} + \frac{1}{b}$$

$$\rightarrow \frac{a+b}{ab} = \frac{S}{P} = \frac{2}{-1} = \boxed{-1}$$

$$x^2 - (2a+1)x + (2ax^2 + 4a + 2) = 0$$

سران

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

$$\rightarrow a = 1 \rightarrow \Delta < 0 \times$$

$$\rightarrow a = -\frac{1}{x} \rightarrow \checkmark$$

$$x^2 - \frac{1}{x}x + \frac{2}{x} \rightarrow (x - \frac{1}{x})(x + 2) \rightarrow x = \frac{1}{x}$$

$$\boxed{x = \frac{1}{x}}$$