نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲ ..... کلاس .....

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(الف) $y = 2x^2 - 4x + 1$ $x_v = \frac{-b}{2a} = \frac{4}{4} = 1$ $y_v = 2\times1^2 - 4\times1 + 1 = -1$

رأس = $(1, -1)$ نوع مینیمم دارد $\Leftarrow a > 0$

(ب) $y = -2x^2 + 3x - 5$ رأس = $\left(\frac{3}{4}, \frac{-31}{8}\right)$ نوع = ماکسیمم دارد $a < 0$

$x_v = \frac{-b}{2a} = \frac{-3}{2\times-2} = \frac{3}{4}$ $y_v = -2\times\left(\frac{3}{4}\right)^2 + 3\left(\frac{3}{4}\right) - 5 = \frac{-62}{18} = -\frac{31}{8}$

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(الف) رأس $\frac{6}{2} = 3$ $(3, -8)$ عرض از مبدأ $(0, 1)$ $a > 0$

$\Delta = 36 - 4 = 32$

$\frac{6 \pm \sqrt{32}}{2} = 3 \pm 2\sqrt{2}$

$(3-2\sqrt{2}, 0)$ $(3+2\sqrt{2}, 0)$

رأس $\frac{-4}{2(-1)} = 2$ $y_v = -4 + 8 + 1 = 5$ رأس $(2, 5)$ عرض از مبدأ $(0, 1)$

$\Delta = 16 + 4 = 20$

$x = \frac{-4 \pm \sqrt{20}}{-2} = 2 \pm \sqrt{5}$ $(2-\sqrt{5}, 0)$ $(2+\sqrt{5}, 0)$ $a < 0$

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$-\frac{b}{a} = \alpha + \beta + \gamma = \frac{-12}{4}$

$\alpha\beta\gamma = \frac{2}{4}$ $\Rightarrow$ $-\alpha\beta\gamma = -(-2)\times\gamma = -\frac{1}{2} \Rightarrow \gamma = -\frac{1}{4}$

$4\left(-\frac{1}{64}\right) + 12\left(\frac{1}{16}\right) + \frac{9}{4} - 2 = 0 \Rightarrow k = -3$

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

$\alpha + \beta = 2m$

$\alpha\beta = m$

$(\sqrt{\alpha} - \sqrt{\beta}) = 1$

$(\sqrt{\alpha} - \sqrt{\beta})^2 = 1$

$\alpha + \beta - 2\sqrt{\alpha\beta} = 1$

$2m - 1 = 2\sqrt{4m}$

$(2m-1)^2 = 4m$

$9m^2 - 6m + 1 = 4m$

$9m^2 - 10m + 1 = 0$

$\Delta = 100 - 36 = 64$

$m = \frac{10 \pm 8}{18}$ $m_1 = 1$ $m_2 = \frac{1}{9}$

$(\sqrt{\alpha} - \sqrt{\beta})^2 = 2m - 2\sqrt{m} = 1$

$m = \frac{1}{9} \Rightarrow 2\left(\frac{1}{9}\right) - 2\sqrt{\frac{1}{9}} = \frac{1}{9} - \frac{2}{3} < 0$

$m = 1$

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

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

$\alpha\beta = -\frac{1}{2}$

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$2x^2 - (m+2)x + m = 0 \xrightarrow{a+b+c=0}$ $\begin{cases} x = 1 \\ y(0) = m \end{cases}$, $x = \frac{m}{1}$

$S = \frac{1}{2}\left|m\left(\frac{m}{2} - 1\right)\right| \Rightarrow \left|m\left(\frac{m}{2} - 1\right)\right| = \frac{3}{2}$

$|m(m-2)| = 3 \Rightarrow$ $\begin{cases} m = -1 \Rightarrow \frac{m}{2} = -\frac{1}{2} \\ m = 3 \quad \frac{m}{2} = \frac{3}{2} \end{cases}$

امیررضا محزون

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$y = ax^2 + 3x + a \quad a > 0$

$x_{\text{رأس}} = -\frac{b}{2a} = -\frac{3}{2a} \qquad a - \frac{9}{4a} = \frac{7}{4} \qquad 8\alpha - \frac{18}{\alpha} = 7$

$8\alpha^2 - 18 = 7\alpha \qquad 8\alpha^2 - 7\alpha - 18 = 0 \qquad \Delta = 49 + 576 = 625$

$\alpha = \frac{7 \pm 25}{16}$

$a_1 = \frac{32}{16} = 2$ ✓ — $a_2 = -\frac{18}{16} = -\frac{9}{8}$ ✗

تک مقدار وجود دارد

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$y = ax^2 + ax + 2 \qquad y = 2bx^2 - bx - 1$

$S\left(\frac{1}{2}, \frac{a^2+16a}{8a}\right) \qquad S\left(\frac{1}{4}, \frac{b^2+16b}{-16b}\right)$

$2b\left(\frac{1}{4}\right) - b\left(\frac{1}{2}\right) - 1 = \frac{a}{8} + 2 \Rightarrow \frac{a}{8} = -3$

$a = -12$

$-\frac{a}{16} + \frac{a}{8} + 2 = \frac{-b}{16} - 1 \Rightarrow \frac{12}{16} = \frac{-b}{16} \Rightarrow b = -6$

$6 - (-12) - 6 = 6$

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$\alpha\beta = \frac{\beta}{25\alpha} \Rightarrow \alpha^2 = \frac{1}{25} \Rightarrow \alpha = \pm\frac{1}{5}$

$x = \alpha: 25\alpha \times \frac{1}{25} + 5\alpha + \beta = 0 \Rightarrow 6\alpha + \beta = 0 \Rightarrow \beta = -6\alpha$

$\beta > \alpha \Rightarrow \alpha = -\frac{1}{5} \qquad \beta = 1$

$y(0.4) = -6(0.4)^2 + 5(0.4) + 1 = 1.16$

$\frac{-1}{-12} + 1 = 0.4$

ناحیه اول $(1.16, 0.4)$

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$x^2 - (a^2 + b^2 - 12)x + (a + b - 1) = 0 \Rightarrow S = a^2 + b^2 - 12 = a + b$

$P \Rightarrow a + b - 1 = ab$

$a^2 + b^2 = (a+b)^2 - 2ab \Rightarrow \underbrace{(a+b)^2}_{y^2} - 2\underbrace{(a+b-1)}_{y} - 12 = \underbrace{a+b}_{y}$

$y^2 - 3y - 10 = 0 \Rightarrow (y-5)(y+2) = 0$

$a + b = 5$ ✓ جواب اعداد طبیعی

$a + b = -2$ ✗ نادرست مجموع

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تمرین طبیعی است