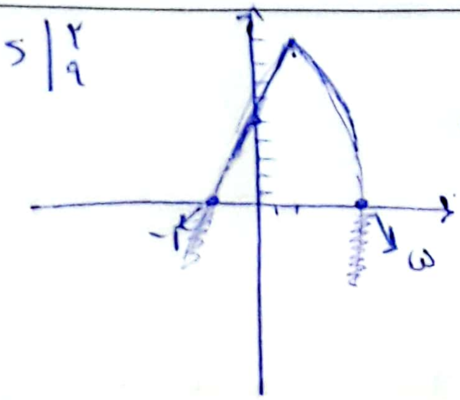
۱۶/۵

پاسخنامه تشریحی تکلیف شماره ...۱۳... کلاس ...یازدهم...

نام و نام خانوادگی ....

۱	$y = (a-1)x^2 + x + 4$ $x = \frac{-b}{2a} \Rightarrow 2 = \frac{-1}{2a-2}$ $-1 = 4(a-1) \Rightarrow 4a = 3 \Rightarrow a = \frac{3}{4}$ $y = (\frac{3}{4}-1)x^2 + x + 3 \Rightarrow -\frac{1}{4}x^2 + x + 3 = 0$ $-x^2 + 4x + 12 = 0 \Rightarrow x^2 - 4x - 12 = 0$ $x = \frac{4 \pm \sqrt{16+48}}{2} \Rightarrow x_1 = 6$ و $x_2 = -2$ غ ق ق طول مثبت $\Leftarrow$ $x = 6$ (۲)
۲	$f(x) = mx^2 - 5x + m$ $m < 0$ $\Delta > 0 \Rightarrow 25 - 4m^2 > 0 \rightarrow 25 > 4m^2 \rightarrow \lvert m \rvert < \frac{5}{2}$ $-\frac{5}{2} < m < 0$ (۲)
۳	$S = \frac{3-\sqrt{5}+3+\sqrt{5}}{3} = \frac{6}{3} = 2$ $P = \frac{3-\sqrt{5}}{3} \times \frac{3+\sqrt{5}}{3} = \frac{9-5}{9} = \frac{4}{9}$ $x^2 - Sx + P = 0 \Rightarrow x^2 - 2x + \frac{4}{9} = 0 \xrightarrow{\times 9}$ ضرایب صحیح (۱/۵)
۴	$2x^2 - 8x + m + 2 = 0$ $\quad 3\alpha^2 + \beta^2 = 12$ $\quad \alpha < \beta$ $\quad m = ?$ $\alpha + \beta = \frac{8}{2} = 4$ $\quad c = m+2$ ① $(\alpha+\beta)^2 = \alpha^2 + \beta^2 + 2\alpha\beta \Rightarrow \alpha^2 + \beta^2 = 16 - 2\alpha\beta$ $3\alpha^2 + \beta^2 \Rightarrow 2\alpha^2 + (\alpha^2+\beta^2) = 12 \Rightarrow 2\alpha^2 + (16 - 2\alpha\beta) = 12$ $2\alpha^2 - 2\alpha\beta = -4 \rightarrow \alpha^2 - \alpha\beta = -2$ ② $2\alpha^2 - 8\alpha + m + 2 = 0 \Rightarrow 2\alpha^2 = 8\alpha - m - 2$ $2(\alpha\beta - 2) = 8\alpha - m - 2$ $m = 8\alpha - 2(\frac{m+2}{2}) + 4$ $m = 8\alpha - m$ ③ $\frac{m}{4}(4 - \frac{m}{4}) = \frac{m+2}{2}$ $16m - m^2 = 8m + 16 \rightarrow (m-4)^2 = 0 \Rightarrow m = 4$ (۲)
۵	$S \mid \frac{2}{9}$  $y = a(x-h)^2 + k \Longrightarrow y = a(x-2)^2 + 9 \xrightarrow{(0,5)} 5 = a(0-2)^2 + 9$ $5 = 4a + 9 \Rightarrow a = -1 \Rightarrow y = -(x^2 + 4 - 4x) + 9$ $y = -x^2 + 4x + 5 \Rightarrow \frac{-4 \pm \sqrt{16+20}}{-2}$ $x = \frac{-10}{-2} = 5$ (۵) $x = \frac{2}{-2} = -1$ $-1 \quad 5$ $- \quad + \quad -$ $\longrightarrow [-1, 5]$ بالای محور x (۲)

$9x^2 - 7x + 9\beta = 0$ $\quad \beta > 0 \quad$ $\frac{1}{\alpha} + \frac{1}{\beta} = ?$

$\alpha + \beta = \frac{7}{9}$ $\quad \alpha \cdot \beta = \frac{9\beta}{\alpha} \to \alpha = \pm 3$ $\quad \alpha\beta^2 - 7\beta + 9\beta = 0 \to \alpha\beta^2 + 2\beta = 0 \to \alpha = -\frac{2}{\beta}$ (↑ عدد صحیح)

$\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha+\beta}{\alpha\beta} = \frac{\frac{7}{\alpha}}{\frac{9\beta}{\alpha}} = \frac{7}{9\beta}$ $\to \beta = 1 \Rightarrow \frac{7}{9}$ $\quad$ فرض $\beta = 1$ یا $\beta = 2$

$\searrow \beta = 2 \Rightarrow \frac{7}{18}$

↳ $\frac{7}{6}$

$\alpha + \beta = \frac{7}{9}$ $\begin{cases} \alpha = 3 \to \beta = \frac{-2}{3} \times \\ \alpha = -3 \to \beta = \frac{+2}{3} \checkmark \end{cases}$

۰/۵ $\quad$ ۶

$x^2 + mx - 2m = 0$ $\quad \alpha^2 - m\beta = 8$

$\alpha + \beta = -m$ $\quad \alpha\beta = -2m$ $\quad \beta = -m - \alpha$

$\left(\alpha^2 - m\left(\frac{-2m}{\alpha}\right) = 8\right) \times \alpha \Rightarrow \alpha^3 + 2m^2 = 8\alpha$

$\alpha(-m-\alpha) = -2m \Rightarrow -\alpha m - \alpha^2 = -2m \Rightarrow \alpha^2 + \alpha m - 2m = 0$

$(-\alpha m + 2m) - m(-m-\alpha) = 0 \Rightarrow -\alpha m + 2m + m^2 + m\alpha = 8$

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

$m = \frac{-2 \pm \sqrt{4+32}}{2}$

$m = 2 \quad , \quad m = -4$

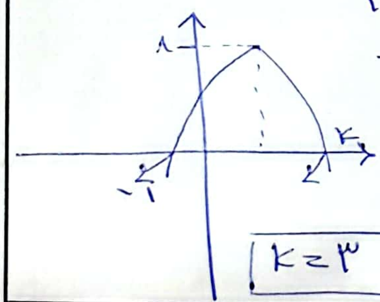
$m = 2 \to \alpha + \beta = -2$ یا

$m = -4 \to \alpha + \beta = 4$

$\alpha^2 = 2m - m\alpha$ $\quad \alpha + \beta = -m$ $\quad 2m + m^2 = 8$ $\quad m = -4 \;\; \Delta < 0 \times$, $m = 2 \;\; \Delta > 0 \checkmark$ $\quad S = -m = -2$

۰/۵ $\quad$ ۷

$f(x) = mx^2 + 4x + \frac{m}{2} + 7$ $\quad \frac{-\Delta}{4a} = 8 \Rightarrow \frac{-b^2 + 4ac}{4a} = \frac{-16 + 2m^2 + 28m}{4m} = 8$



$-16 + 2m^2 + 28m = 32m \to 2m^2 - 4m - 16 = 0$

$m^2 - 4m - 32 = 0 \; (m-8)(m+4)$ ($2\times$)

$\boxed{m = 4}$ غ ق ق → 8 min $\quad \boxed{m = -2}$ → ✓ max

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

$x_1, x_2 = \frac{-4 \pm \sqrt{16+48}}{-4} \Rightarrow \frac{-4+8}{-4} = \boxed{-1}$

$\frac{-4-8}{-4} = \boxed{3}$

$\boxed{K = 3}$

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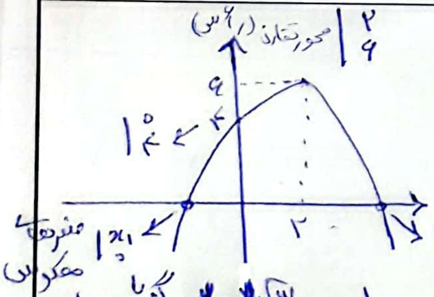

$y = a(x-h)^2 + k$ $\quad$ مجموع معکوس صفرها ؟ $\frac{1+\sqrt{3}+1-\sqrt{3}}{-4} = \frac{2}{-4} = \left(-\frac{1}{2}\right)$

$y = a(x-2)^2 + 6 \Rightarrow 4 = a(0-2)^2 + 6 \to -2 = 4a$

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

$y = -\frac{1}{2}(x^2 + 4 - 4x) + 6 \Rightarrow y = -\frac{1}{2}x^2 + 2x - 2 + 6$

$\frac{-2 \pm \sqrt{4+8}}{-1}$ ($2\sqrt{3}$) $\quad x_1 = \frac{-2-2\sqrt{3}}{-1} = 2 + 2\sqrt{3}$

$x_2 = \frac{-2+2\sqrt{3}}{-1} = 2 - 2\sqrt{3}$

$\frac{1}{2+2\sqrt{3}} \xrightarrow{\text{گویا}} \frac{2-2\sqrt{3}}{-8}$, $\frac{1}{2-2\sqrt{3}} \xrightarrow{\text{گویا}} \frac{1+\sqrt{3}}{-4}$

۲ $\quad$ ۹

$x^2 - (4a+4)x + (3a^2 + 6a + 4) = 0$ $\quad x_1 = 2$ $\quad x_2 = ?$

$4 - 8a - 8 + 3a^2 + 6a + 4 = 0 \Rightarrow 3a^2 - 2a - 1 = 0 \Rightarrow a^2 - 2a - 3 = 0 \; (a - \frac{3}{3})(3a + 1)$

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

$\boxed{a = 1}$

$x^2 - 8x + 12 = 0 \to (x-6)(x-2) = 0 \to x_2 = 6$

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

$\left(x^2 - \frac{8}{3}x + \frac{4}{3}\right) = 0 \; (\times 3) \to \left(x - \frac{6}{3}\right)(3x - 2) = 0 \to x_2 = \frac{2}{3}$

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