۱۷,۵

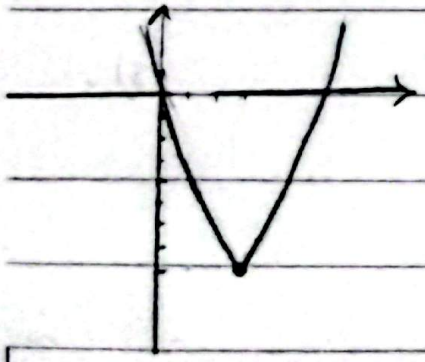
پاسخنامه تکلیف شماره ۲۴ : هلنا عامری دهم دفتر A

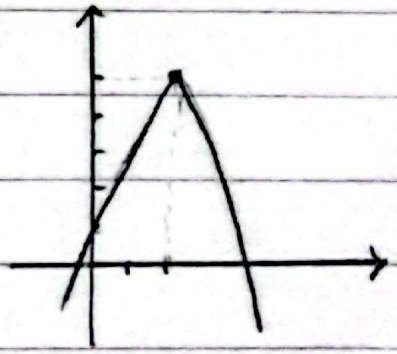
۱) الف) $y = 2x^2 - 4x + 1$ رأس $\left| \begin{matrix} \frac{-b}{2a} = \frac{4}{4} = 1 \\ 2(1)^2 - 4(1) + 1 = -1 \end{matrix} \right\} \Big|_{-1}^{1}$ → سهمی min دارد. زیرا $a > 0$

ب) $y = -2x^2 + 3x - 5$ رأس $\left| \begin{matrix} \frac{-b}{2a} = \frac{-3}{-4} = \frac{3}{4} \\ \frac{-\Delta}{4a} = \frac{4ac - b^2}{4a} = \frac{40 - 9}{-8} = \frac{-31}{8} \end{matrix} \right\} \Big|_{\frac{-31}{8}}^{\frac{3}{4}}$ سهمی max دارد زیرا $a < 0$

۲) الف) $\left| \begin{matrix} \frac{-b}{2a} = \frac{6}{2} = 3 \\ 9 - 18 + 1 = -8 \end{matrix} \right.$

ب) $\left| \begin{matrix} \frac{-b}{2a} = \frac{-4}{-2} = 2 \\ -(2)^2 + 4(2) + 1 = -4 + 8 + 1 = 5 \end{matrix} \right.$





$4x^3 + kx^2 - 9x - 2 = 0 \quad \alpha+\beta=1 \quad \alpha\beta=-2 \Rightarrow \alpha+\beta+r=\frac{-k}{4}$

$\alpha\beta + \alpha r + \beta r = \frac{9}{4}$

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

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

$1 + (-\frac{1}{4}) = \frac{-k}{4} \Rightarrow \boxed{k=-12}$

(۲) ۱۴

$x^3 - 12mx + m = 0 \quad x_1 = \frac{-1}{2} \Rightarrow 2x^2 + \frac{1}{2}x - \frac{1}{2} = 0 \Rightarrow 4x^2 + x - 2 = 0$

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

$x^2 + 3m - 8 = 0 \quad (x-4)(x+2)$

$\frac{4}{4} = 1, \frac{-2}{4} = \frac{-1}{2}$ ← مقادیر ریشه‌ها

$1 \times \frac{-1}{2} = \frac{-1}{2}$ حاصلضرب ریشه‌ها

(۳) ۵

$2x^2 - (m+2)x + m = 0 \xrightarrow{a+b+c=0} x=1, \frac{m}{2} \Rightarrow S = \frac{1}{2}\left|m(\frac{m}{2}-1)\right|$

$|m(m-2)| = 8 \Rightarrow \begin{cases} m=-1 \Rightarrow \frac{m}{2} = \frac{-1}{2} \\ m=4 \Rightarrow \frac{m}{2} = \frac{4}{2} \end{cases} \Rightarrow \frac{-1}{2}, \frac{4}{2}$

(۴) ۱ و ۹

$x_S = \frac{-b}{2a} = \frac{-8}{2a} \quad y_S = \frac{\Delta}{4a} = \frac{4a^2-9}{4a} = a - \frac{9}{4a} = \frac{7}{8} \Rightarrow 8a^2 - 18 = 7a \Rightarrow 8a^2 - 7a - 18 = 0$

$\Delta = 49a^2 \Rightarrow a = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{7 \pm \sqrt{49a^2}}{16} = a_1 = 2, a_2 = \frac{-9}{8}$

~~$\frac{a_1}{a_2}$ عدد صحیح~~ ~~a_2~~ نقط مقدار (+) برای a قابل قبول است ← a_1 مقدار

(۵) ۷

$x^2 - (a+1)x + a = 0 \begin{cases} x=1 \\ x=a \end{cases}$ غیر گویا $\Rightarrow a=3$ $\quad x^2 - 10x + 10 = 0$

$K + (K+2) = 10 \quad \boxed{K=4} \Rightarrow 4, 9 \Rightarrow 4 \times 9 - 3 \times 1 = 21$

(۵) ۱۸

حل بدون استفاده از مشتق

$x_S = \frac{b}{2a} = \frac{-a}{-2a} = \frac{1}{2} \quad y_S = -a(\frac{1}{2})^2 + a(\frac{1}{2}) + 2 = \frac{9}{4} + 2$

$y_2 = b(\frac{1}{2})^2 - b(\frac{1}{2}) - 1 = \frac{-b}{4} - 1 \Rightarrow \frac{a}{4} + 2 = \frac{-b}{4} - 1 \Rightarrow a + b = -12 \Rightarrow b - a \Rightarrow b = -12 - a$

$b - a = -12 - a - a = b - a = \boxed{-12 - 2a}$

(۶) ۹

$\alpha\beta = \frac{\beta}{25\alpha} \Rightarrow \alpha^2 = \frac{1}{25} \Rightarrow \alpha = \frac{\pm 1}{5}$ $\quad x = \alpha: 25\alpha \times \frac{1}{25} + 4\alpha + \beta = 0$

$5\alpha + \beta = 0 \Rightarrow \beta = -5\alpha \quad \beta > \alpha \begin{cases} \alpha = \frac{-1}{5} \\ \beta = 1 \end{cases} \Rightarrow y = -5x^2 + 4x + 1$

$y_S = \frac{-\Delta}{4a} \xrightarrow{a<0} + \quad , \quad \frac{-b}{2a} = \frac{-4}{-10} = \frac{2}{5}$ دو عامل اول

LINE NOTE

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

$P = a+b-1 = a \cdot b$

$a^2+b^2 = (a+b)^2 - 2ab \rightarrow \underbrace{(a+b)^2}_{y} - 2\underbrace{(a+b-1)}_{y} - 12 = \underbrace{a+b}_{y} \rightarrow y^2 - 3y - 10 = 0$

$(y-5)(y+2) = 0$

$y = 5 \leftarrow a+b = 5$ (2)

$y = -2$

$y = ax^2 + ax + 2 \rightarrow S\left(\frac{1}{2}, \frac{a^2+8a}{4a}\right)$

$y = 2bx^2 - bx - 1 \rightarrow S\left(\frac{1}{4}, \frac{b^2+8b}{-8b}\right)$

$2b\left(\frac{1}{4}\right) - b\left(\frac{1}{2}\right) - 1 = \frac{a}{4} + 2 \rightarrow \frac{a}{4} = -3 \Rightarrow a = -12$

$-\frac{a}{16} + \frac{a}{4} + 2 = -\frac{b}{8} - 1 \rightarrow \frac{12}{16} = -\frac{b}{8} \rightarrow b = -6$

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