نام و نام خانوادگی ......سیده نیلیم بادی...... **پاسخنامه تشریحی تکلیف شماره** ..۲٤.. **کلاس** ......دهم ریاضی B......

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الف) $y=2x^2-4x+1$ مینیمم $\xrightarrow{a>0}$ $min\left|\begin{matrix}-\frac{b}{2a}\\ -\frac{\Delta}{4a}\end{matrix}\right.\Rightarrow min\left|\begin{matrix}\frac{4}{4}=1\\ -1\end{matrix}\right.\Rightarrow min\left|\begin{matrix}1\\ -1\end{matrix}\right.$

ب) $y=-2x^2+3x-5 \xrightarrow{a<0} max\left|\begin{matrix}\frac{-3}{-4}=\frac{3}{4}\\ -\frac{\Delta}{4a}\end{matrix}\right.\Rightarrow max\left|\begin{matrix}\frac{3}{4}\\ -\frac{31}{8}\end{matrix}\right.$ ماکسیمم

$-\cancel{2}\times\frac{9}{\cancel{16}_{8}}+\frac{9}{4}-5=\frac{-9+18-40}{8}=-\frac{31}{8}$

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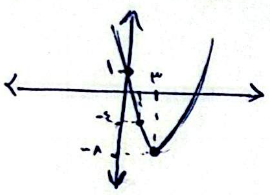
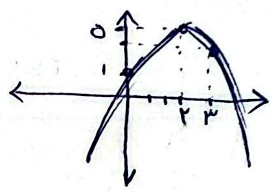
الف) $y=x^2-6x+1$

$S\left|\begin{matrix}\frac{6}{2}=3\\ -8\end{matrix}\right.\quad\left|\begin{matrix}0\\ 1\end{matrix}\right.\quad\left|\begin{matrix}1\\ -4\end{matrix}\right.$ مینیمم



ب) $y=-x^2+4x+1$

$S\left|\begin{matrix}\frac{-4}{-2}=2\\ -4+8+1=5\end{matrix}\right.\quad\left|\begin{matrix}0\\ 1\end{matrix}\right.\quad\left|\begin{matrix}3\\ -9+12+1=4\end{matrix}\right.$



۳

$4x^3+kx^2-9x-2=0$

$\left.\begin{matrix}\alpha\beta=-2\\ \alpha+\beta=1\Rightarrow\alpha=1-\beta\end{matrix}\right\}\Rightarrow(1-\beta)(\beta)=-2\Rightarrow\beta^2-\beta-2=0\quad(\beta-2)(\beta+1)=0\begin{cases}\beta=-1,\ \alpha=2\\ \beta=2,\ \alpha=-1\end{cases}$

ریشه‌ها $\rightarrow -1, 2 \Rightarrow 4\times 8+4k\overset{-20}{-18-2}=0\Rightarrow 12+4k=0\quad k=-3$ ✓

$\Rightarrow -4+k+9-2=0\quad k+3=0\Rightarrow\boxed{k=-3}$ ✓

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$x^2-3mx+m=0$

$|\sqrt{\alpha}-\sqrt{\beta}|=1\xrightarrow{\text{به توان ۲}}(\sqrt{\alpha}-\sqrt{\beta})^2=1\Rightarrow\overbrace{\alpha+\beta}^{3m}\overbrace{-2\sqrt{\alpha\beta}}^{-2\sqrt{m}}=1$

$3m-2\sqrt{m}-1=0\quad(3\sqrt{m}+1)(\sqrt{m}-1)=0\begin{cases}\sqrt{m}=1\ ✓\Rightarrow m=1\\ 3\sqrt{m}=-1\ ✗\end{cases}$

$\xrightarrow{m=1}2x^2-x-1=0\Rightarrow\alpha\beta=\frac{c}{a}=\boxed{\frac{-1}{2}}$

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$S=\frac{m\left(\frac{\sqrt{\Delta}}{|a|}\right)}{2}=\frac{3}{4}\Rightarrow\frac{\frac{m\left(\sqrt{(m+2)^2-8m}\right)}{\cancel{2}}}{\cancel{2}}=\frac{3}{4}$

$m\left(\sqrt{(m-2)^2}\right)=3\Rightarrow m|m-2|=3\begin{cases}m<2\Rightarrow m^2-2m+3=0 & \text{غ‌ق‌ق}\ \Delta<0\\ m>2\Rightarrow m^2-2m-3=0 & \begin{cases}m=-1 & \text{غ‌ق‌ق}\\ m=3 & ✓\end{cases}\end{cases}$

$\xrightarrow{m=3}y=x^2-mx+1=x^2-3x+1$

طول رأس سهمی $=\frac{-b}{2a}=\boxed{\frac{3}{2}}$

$y = ax^2 + 3x + a \rightarrow y_{min} = \frac{7}{8}$ $\xrightarrow{\text{چون } min} a > 0$ $\frac{-\Delta}{4a} = \frac{7}{8}$ $\frac{-(9-4a^2)}{4a} = \frac{7}{8} \Rightarrow -2(9-4a^2) = 7a$ $8a^2 - 7a - 18 = 0$ $\Delta = 49 + \underbrace{4\times18\times8}_{576} = 625$ $a_1, a_2 = \frac{7 \pm \sqrt{625}}{16} =$ $a_1 = \frac{7+25}{16} = \frac{32}{16} = 2$ $a_2 = \frac{7-25}{16} = \frac{-18}{16}$ غ ق ق $\rightarrow$ چون کوچکتر از صفر $\Rightarrow \boxed{a=2}$ یک مقدار	۶
$x^2 - (a+1)x + a = 0$ ریشه‌ها دو عدد طبیعی متوالی $\frac{\sqrt{\Delta}}{\lvert a\rvert} = 2$ $\sqrt{\underbrace{(a+1)^2 - 4a}_{(a-1)^2}} = 2 \rightarrow (a-1)^2 = 4$ $(a-1-2)(a-1+2) = 0 \rightarrow (a-3)(a+1) = 0$ $a = -1 \rightarrow$ غ ق ق $\rightarrow x^2 - 1 = 0 \rightarrow x = \pm 1$ نا طبیعی است $a = 3 \checkmark \Rightarrow P_1 = 3$ $x^2 - (\underbrace{3a+1}_{a=3 \Rightarrow 10})x + b = 0$ ریشه‌ها دو عدد زوج متوالی $\frac{\sqrt{\Delta}}{\lvert a\rvert} = 2$ $\sqrt{100 - 4b} = 2 \Rightarrow 100 - 4b = 4 \Rightarrow 4b = 96$ $b = 24 \Rightarrow P_2 = b = 24$ اختلاف حاصل‌ضرب‌ها $= \lvert P_2 - P_1\rvert = \lvert 24 - 3\rvert = \boxed{21}$	۷
(1) $y = -ax^2 + ax + 2$ $S_1 \left\lvert \begin{array}{l} \frac{-a}{-2a} = \frac{1}{2} \\ -\frac{a}{4} + \frac{a}{2} + 2 = \frac{-a+2a+8}{4} = \frac{a+8}{4} \end{array}\right.$ (2) $y = 2bx^2 - bx - 1$ $S_2 \left\lvert \begin{array}{l} \frac{b}{4b} = \frac{1}{4} \\ \frac{2b}{16} - \frac{b}{4} - 1 = \frac{b - 2b - 8}{8} = \frac{-(b+8)}{8} \end{array}\right.$ $\xrightarrow{(2) \text{ در } S_1} \frac{2b}{4} - \frac{b}{2} - 1 = \frac{a+8}{4} \Rightarrow \frac{a+8}{4} = -1 \Rightarrow a + 8 = -4 \Rightarrow a = -12$ $\xrightarrow{(1) \text{ در } S_2} \frac{-a}{16} + \frac{a}{4} + 2 = \frac{-(b+8)}{8} \Rightarrow \frac{-a+4a+32}{16} = \frac{3a+32}{16} = \frac{-(b+8)}{8} \xRightarrow{a=-12} \cancel{-}2 = \cancel{-}(b+8)$ $b + 8 = 2 \Rightarrow b = -6$ $b - a = -6 + 12 = \boxed{6}$	۸
$y = 25\alpha x^2 + 4x + \beta \Rightarrow$ (1) $25\alpha^3 + 4\alpha + \beta = 0$ (2) $25\alpha\beta^2 + 4\beta + \beta = 0$ (2) $5\beta(5\alpha\beta + 1) = 0$ $\beta = 0 \rightarrow \frac{-4}{50\alpha} = 0 + \alpha = \alpha \Rightarrow 25\alpha^2 = -2$ غ ق ق $5\alpha\beta + 1 = 0 \rightarrow \alpha\beta = -\frac{1}{5} = P = \frac{\beta}{25\alpha} \Rightarrow \frac{-1}{5\alpha} = \frac{\beta}{25\alpha} \Rightarrow \beta = -5\alpha$ (1) $\xrightarrow{\beta = -5\alpha} 25\alpha^3 + 4\alpha - 5\alpha = 0$ $25\alpha^3 - \alpha = 0$ $\alpha(25\alpha^2 - 1) = 0$ $\alpha(5\alpha - 1)(5\alpha + 1) = 0$ $\alpha = 0$ غ ق ق $\rightarrow$ سهمی نیست $\alpha = \frac{1}{5}$ $\beta = -1 \rightarrow \beta < \alpha$ غ ق ق $\alpha = -\frac{1}{5}$ $\beta = 1 \rightarrow \checkmark$ $y = 25 \times -\frac{1}{5}x^2 + 4x + 1 = -5x^2 + 4x + 1 \Rightarrow S \left\lvert \begin{array}{l} \frac{-4}{-10} = 0/4 \\ -0/8 + 1/6 + 1 = 1/8 \end{array}\right. \Rightarrow S \left\lvert \begin{array}{l} 0/4 \\ 1/8 \end{array}\right. \rightarrow$ درست $\boxed{\text{ناحیه اول}}$	۹
$a + b = S$ $ab = P$ $S = (a^2 + b^2 - 12) = S^2 - 2P - 12$ $P = a + b - 1 = S - 1 \rightarrow P = S - 1$ $\Rightarrow S^2 - 2(S-1) - 12 = S$ $S^2 - 2S - 10 = S$ $S^2 - 3S - 10 = 0$ $(S-5)(S+2) = 0$ $S = 5$, $S = -2$ $\rightarrow a + b = 5$ یا -2 ولی a, b در اعداد طبیعی $\rightarrow ab = P > 0$ $S = 5 \Rightarrow P = 4 \checkmark$ $S = -2 \rightarrow P = -3 \times$ $\Rightarrow \boxed{a + b = 5}$	۱۰