۲۰ آزمون

پاسخ تشریحی دهم ریاضی B

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$-\frac{b}{2a}=-1 \Rightarrow b=2a$ | $x=-1 \Rightarrow a-b+c=9 \Rightarrow -a+c=9$ | $x=3 \Rightarrow 9a+3b+c=1$ ($3b=6a$, $c=9+a$) $\Rightarrow 16a=-8$, $a=-\frac{1}{2}$

$y=-\frac{1}{2}x^2-x+\frac{17}{2}$

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$y=2x^2+mx+m+6=0 \longrightarrow$ دو ریشه دارد $\Rightarrow m^2-4(2m+12)>0 \Rightarrow m^2-8m-48>0 \Rightarrow (m+4)(m-12)>0 \Rightarrow$ (-4, 12: $+\ |\ -\ |\ +$)

$\Rightarrow m\in(-\infty,-4)\cup(12,+\infty)$ I , $S=-\frac{m}{2}>0$, III $\frac{m+6}{2}>0 \Rightarrow m>-6$ $\xrightarrow{\cap\ \text{I,II,III}}$ $-6<m<-4$

$m<0$ II

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$3x^2+(2m-1)x+2-m=0 \Longrightarrow$ دو ریشه $\Rightarrow 4m^2+1-4m-4(6-3m)>0 \Rightarrow 4m^2+8m-23>0$

$m=\frac{-8\pm\sqrt{64-4(4)(-23)}}{8} \Rightarrow \frac{-2\pm\sqrt{27}}{2}$

I $m\in(-\infty,-1-\frac{\sqrt{27}}{2})\cup(-1+\frac{\sqrt{27}}{2},+\infty)$ ($-1-\frac{\sqrt{27}}{2}$, $-1+\frac{\sqrt{27}}{2}$: $+\ |\ -\ |\ +$) قبول ... قبول

II $\alpha+\beta=\frac{1}{\alpha\beta} \Rightarrow -\frac{2m+1}{3}=\frac{1}{\frac{2-m}{3}} \Rightarrow 2m^2-5m-7=0 \Rightarrow (2m-7)(m+1)=0 \Rightarrow m\begin{cases}-1\\ \frac{7}{2}\end{cases} \xrightarrow{\cap\ \text{I,II}} \frac{7}{2}=m$

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$x^2-x-4=0 \Rightarrow S=1, P=-4$ | $x_2^3+x_1^3+\frac{1}{x_2}+\frac{1}{x_1}=(x_1+x_2)^3-3(-4)(x_1+x_2)+\frac{x_1+x_2}{x_1x_2}$

$1+12-\frac{1}{4}=\frac{51}{4}=S$

$(x_2^3+\frac{1}{x_1})(x_1^3+\frac{1}{x_2})=(x_1x_2)^3+x_1^2+x_2^2+\frac{1}{x_1x_2}$, ($x_1^2+x_2^2=1-2(-4)=9$, $x_1x_2=-4$)

$=-64+9-\frac{1}{4}=-\frac{221}{4}$ $\quad y=x^2-\frac{51}{4}x-\frac{221}{4}$

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$\sqrt[3]{x^2}=t \Rightarrow (t+\frac{1}{t}+1)(t-1)=t^2-\frac{1}{t} \Rightarrow \sqrt[3]{x^4}-\frac{1}{\sqrt[3]{x^2}}=2\sqrt[3]{x} \Rightarrow \frac{\sqrt[3]{x^6}-1}{\sqrt[3]{x^2}}=2\sqrt[3]{x} \Rightarrow x^2-1=2x$

$x^2-2x-1=0$, $S=2$

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$3x^2-\alpha x+4=0$, $\overset{*}{\alpha}=3\beta \Rightarrow P=\frac{4}{3} \Rightarrow 3\beta^2=\frac{4}{3} \Rightarrow \beta^2=\frac{4}{9} \Rightarrow \beta\begin{cases}\frac{2}{3}\\ -\frac{2}{3}\end{cases}$

$\Rightarrow S\begin{cases}\frac{8}{3}=\frac{\alpha}{3}\longrightarrow \alpha=8\\ -\frac{8}{3}=\frac{\alpha}{3}\longrightarrow \alpha=-8\end{cases}$ $\quad 8-(-8)=16$ $\quad \overset{*}{\Longrightarrow} \alpha\begin{cases}2\\ -2\end{cases}$

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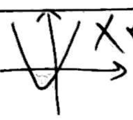
$y=ax^2+(3+2a)x \Rightarrow$ ① $a>0$, ②



X دارد ناحیه ۳

ریشه صفر و ریشه مضاعف

$\Delta\geq0 \Rightarrow 9+4a^2+12a\geq0 \Rightarrow (2a+3)^2\geq0$ ③ $a\neq-\frac{3}{2}$

④ $S\geq0 \longrightarrow \frac{-3+(-2a)}{a}\geq0 \Rightarrow -\frac{3}{2}>a \longrightarrow$ ① و ② و ③ اشتراک ~~④~~

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$y = -x^2 - 2x + b$, $y = x^2 + ax - 2 \Rightarrow \frac{-b}{2a} = \frac{2}{-2} = \frac{-a}{2} \Rightarrow a = 2$

$\begin{cases} 1 = -x^2 - 2x + b \\ 1 = x^2 + 2x - 2 \end{cases}$ ①

$2 = -2 + b \Rightarrow b = 4$

$ab = 2 \times 4 = 8$

$2am^2 + am - 4 = 0 \Rightarrow S = \frac{-a}{2a} = \frac{-1}{2}$, $P = \frac{-4}{2} = -2$ $\left\{ 2m^2 - am + b = 0 \right.$ ②

$\Rightarrow S = \alpha + \frac{1}{2} + \beta + \frac{1}{2} = \frac{-1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{-(-a)}{2} \Rightarrow a = 1$

$P = (\alpha + \frac{1}{2})(\beta + \frac{1}{2}) = \alpha\beta + \frac{1}{2}(\alpha + \beta) + \frac{1}{4} = \frac{+b}{2} \Rightarrow -2 + \frac{1}{2}(\frac{-1}{2}) + \frac{1}{4} = \frac{+b}{2} \Rightarrow b = -4$

$ab = -4 \times 1 = -4$

$\Rightarrow \left[\frac{\overbrace{ab}^{-4}}{4}\right] = [-2]$ ③

$m^2 + 4m + 4 = 0 \Rightarrow S = -4 \Rightarrow \alpha = -4 - \beta$ ① $\left\{ m^2 + 2m - 2m = 0 \right.$

$S = -2 \Rightarrow \alpha = -2 - \gamma$ ② $\left\{ \text{①, ②} \Rightarrow -4 - \beta = -2 - \gamma \right.$

$\boxed{\gamma - \beta = 2}$ ④