Subject: ۲۲ ـ دهم ریاضی   آیسا علیاری
Date: No:

①
$x^2-5x+2=0 \to S=\frac{-(-5)}{1}=5 \;,\; P=\frac{2}{1}=2$

$\frac{4\alpha+\beta^5}{5\beta^2}=\frac{4\alpha}{5\beta^2}+\frac{\beta^3}{5}=\frac{(2\alpha\beta)\alpha}{(\alpha+\beta)\beta^2}+\frac{\beta^3}{\alpha+\beta}=\frac{2\alpha^2\beta}{\beta^2(\alpha+\beta)}+\frac{\beta^3}{\alpha+\beta}$

$\frac{2\alpha^2}{\beta(\alpha+\beta)}+\frac{\beta^3}{(\alpha+\beta)}=\frac{(\alpha\beta)\alpha^2}{\beta(\alpha+\beta)}+\frac{\beta^3}{(\alpha+\beta)}=\frac{\alpha^3+\beta^3}{\alpha+\beta}=\frac{S^3-3SP}{S}=S^2-3P$

$5^2-3\times 2=\boxed{19}$

②
خط تقارن $=\frac{3-1.5}{2}=\frac{1.5}{2}=\frac{3}{4} \Rightarrow -\frac{b}{2a}=\frac{3}{4} \Rightarrow S=\frac{3}{4}\times 2=\boxed{\frac{3}{2}}$

③
$\frac{\sqrt{\Delta}}{|a|}=\frac{\sqrt{b^2-4ac}}{|a|}=\frac{\sqrt{4k^2-20}}{1}=\frac{4}{3}k$

$4k^2-20=\frac{16}{9}k^2 \to \frac{36k^2}{9}-\frac{16k^2}{9}=20 \to \frac{20k^2}{9}=20$

$\frac{1}{9}k^2=1 \to k^2=9 \quad \left[\frac{k^2}{2}\right]=\left[\frac{9}{2}\right] \Rightarrow \boxed{4}$

④
$-\frac{b}{2a}=\frac{-5+3}{2}=-\frac{2}{2}=-1 \to -\frac{b}{2a}=-1 \to -\frac{b}{a}=-2 \Rightarrow S=-2$

$\alpha^2+\beta^2=5 \to S^2-2P=5 \to 4-2P=5 \to P=\boxed{-\frac{1}{2}}$

$\frac{c}{a}=-\frac{1}{2} \to \frac{a+1}{a}=-\frac{1}{2} \to a=-\frac{2}{3} \qquad \frac{4ac-b^2}{4a}=1 \to c-\frac{b^2}{4a}=1$ (*) $\to \boxed{c=\frac{1}{3}}$

$* \; -\frac{b}{a}=-2 \to \frac{b}{a}=2 \to b=2a$

⑦
$a^2=\alpha\beta \to a^2=2a-1 \to a^2-2a+1=0$

$(a-1)(a-1)=0 \to a=1$

$*\;\alpha\beta=\frac{2a-1}{1}=2a-1$

$x^2+2(a+1)x+2a-1=0 \to x^2+4x+1=0$ جواب نهایی ۲

dotnote

(۵)

$-x^2+5x+m=0 \to S=5 ,\ P=-m$ ــ خط تقارن $= \frac{5}{2} < \frac{9}{2}$ ✓

$b^2-4ac = 25-(4(-1)(m)) = 25+4m>0 \to 4m>-25 \to \boxed{m>-\frac{25}{4}}$

$\frac{-5\pm\sqrt{25+4m}}{-2} < \frac{9}{2} \to 5\pm\sqrt{25+4m} < 9 \to \pm\sqrt{25+4m} < 4$

($-$) علامت درسته

$\sqrt{25+4m}<4 \to 25+4m<16 \to 4m<-9 \to \boxed{m<-\frac{9}{4}}$

جواب نهایی ← $\boxed{-\frac{25}{4}<m<-\frac{9}{4}}$

(۶)

$y=mx^2-12x+5m-1 \to a>0 \to m>0$

$\frac{-\Delta}{4a} = \frac{4ac-b^2}{4a} \to \frac{4m(5m-1)-144}{4m} = 2$

$20m^2-4m-144 = 8m \to 20m^2-12m-144=0$

$b^2-4ac = 144-4\times 20(-144) = 144+80\times 144 = 81\times 144 \to \boxed{\sqrt{81\times 144}=108}$

$\frac{-b\pm\sqrt{\Delta}}{2a} = \frac{12\pm 108}{40} = $ 3 ✓ , $-\frac{12}{5}$ ✗ خط تقارن $= \frac{-b}{2a} = \frac{12}{2m} = \boxed{2}$

(۸)

$x^4-7x^2-5=0 \to x^2 = \frac{7\pm\sqrt{49-(-20)}}{2} = \frac{7\pm\sqrt{69}}{2}$

$x^2>0 \to \frac{7+\sqrt{69}}{2} \to x=\pm\sqrt{\frac{7+\sqrt{69}}{2}}$ $S=0$ $P=-\frac{7+\sqrt{69}}{2}$

$2P^2-3SP+2S = 2\left(-\frac{7+\sqrt{69}}{2}\right)^2+0+0 = \boxed{59+7\sqrt{69}}$

(۹)

$y=kx^2-4x-6$, $y=-4x-4$ $\frac{-b}{2a} = \boxed{\frac{2}{k}}$

$\frac{4ac-b^2}{4a} = \frac{4k(-6)-16}{4k} = -6-\frac{4}{k}$

$-6-\frac{4}{k} = -4\left(\frac{2}{k}\right)-4 \to -6-\frac{4}{k} = \frac{-8}{k}-4 \to k=2$

$\boxed{-6-\frac{4}{2} = -6-2 = -8}$

Subject:

Date: . . No:

(10)

$y = -mx^2 + mx + 1$ و $y = -m - x$

$-mx^2 + mx + 1 = -m - x \rightarrow -mx^2 + (m+1)x + m + 1 = 0$

$\Delta = b^2 - 4ac < 0 \rightarrow (m+1)^2 - 4(-m)(m+1) < 0 \rightarrow +5m^2 + 6m + 1 < 0$

$(5m+1)(m+1) < 0 \rightarrow$ -1 $-\frac{1}{5}$ (+ ∅ − ∅ +)

$(-1 > -\frac{1}{5})$ ← ج