19,75

آروین عباسی

(1) (2)

(1) $\alpha^2-5\alpha+2=0 \rightarrow \alpha^2=5\alpha-2$

(2) $\beta^2-5\beta+2=0 \rightarrow \beta^2=5\beta-2 \rightarrow \beta(5\beta-2) \rightarrow 5\beta^2-2\beta \rightarrow 5(5\beta-2)-2\beta \rightarrow$

(3) $23\beta-10 \rightarrow (23\beta-10)\times\beta \rightarrow 23\beta^2-10\beta \rightarrow 23(5\beta-2)-10\beta \Rightarrow 105\beta-46 \rightarrow$

(4) $(105\beta-46)\times\beta \rightarrow 105\beta^2-46\beta \rightarrow 105(5\beta-2)-46\beta \Rightarrow 479\beta-210=\beta^5$

صورت $4\alpha+\beta^5 \rightarrow 4\alpha+479\beta-210 \rightarrow \alpha^2-5\alpha+2=\beta^2-5\beta+2 \rightarrow \alpha^2-\beta^2-5(\alpha-\beta)=0$

مخرج $5\beta^2 \rightarrow 5(5b-2)=25b-10$

$(\alpha-\beta)(\alpha+\beta)-5(\alpha-\beta) \rightarrow (\alpha-\beta)(\alpha+\beta-5)=0$

صورت $20-4\beta+479b-210=475b-190$; $\alpha+\beta=5 \rightarrow \alpha=5-\beta$; $4\alpha=20-4\beta$

$$\frac{475b-190}{25b-10} \Rightarrow \frac{95(5b-2)}{5(5b-2)}=\frac{95}{5}=\boxed{19}$$ ✓

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(3) (2)

$\frac{3+(-1,5)}{2}=\frac{1,5}{2}=0,75$

$\frac{3+1,5}{2}=2,25$; $3-2,25=0,75$; $-1,5+2,25=0,75$

$2\times0,75=1,5$ ✓ — چون ۲ نقطه از رو محور است.

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(3) (2)

$|x_1-x_2| \rightarrow \frac{\sqrt{\Delta}}{|a|} \rightarrow \frac{\sqrt{(2k)^2-4\times1\times5}}{1} \Rightarrow \sqrt{4k^2-20}=\frac{4}{3}k \rightarrow$

$4k^2-20=\frac{16}{9}k^2 \rightarrow 36k^2-180=16k^2 \rightarrow 20k^2=180 \rightarrow k^2=9 \rightarrow k=3,\ -3$

$\left[\frac{k^2}{2}\right] \rightarrow \left[\frac{9}{2}\right] \rightarrow \left[\frac{8}{2}\right] \rightarrow 4$ ✓

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(4) (2)

$\frac{3+(-5)}{2}=-1$ → رأس

$\frac{\alpha+\beta}{2}=-1 \rightarrow \alpha+\beta=-2$

$\alpha^2+\beta^2=(\alpha+\beta)^2-2\alpha\beta \rightarrow$

$5=4-2\alpha\beta \rightarrow 1=-2\alpha\beta \rightarrow -\frac{1}{2}$

$y=a(x-\alpha)(x-\beta)$

$y=a(x^2-(\alpha+\beta)x+\alpha\beta) \rightarrow a(x^2+2x-\frac{1}{2})$

$1=a((-1)^2+2(-1)-\frac{1}{2})=a(-\frac{3}{2}) \rightarrow a=-\frac{2}{3}$

$x=0 \rightarrow y=-\frac{2}{3}(0^2+2\times0-\frac{1}{2})=+\frac{1}{3} \rightarrow (0,\frac{1}{3})$ ✓

۵) ۲ ✓

$-x^2+5x+m=0 \to m<-\frac{9}{4} \to a<0$ رو به پایین است

$\Delta = 25+4m>0 \to m>-\frac{25}{4}$

$f(\frac{5}{2}) \to -(\frac{5}{2})^2+5(\frac{5}{2})+m \to -\frac{25}{4}+\frac{50}{4}+m=\frac{25}{4}+m \to \frac{25}{4}+m<0 \to m<-\frac{25}{4}$

ترکیب ← $-\frac{25}{4}<m<-\frac{9}{4}$ ← -3 و -4 و -5 و -6

۶) ۲

$mx^2-12x+2m+1 \to \frac{-b}{2a} \to \frac{12}{2m}=2 \to m=3$ ✓

$3x^2-12x+16 \to f(2) \to 12-24+16=4$ ✓

۷) ۲

$\alpha^2=\alpha\beta$

$x^2+2(a+1)x+2a-1=0$ ضرب ریشه‌ها $\to 2a-1 \} \alpha\beta=2a-1 \to a^2=2a-1 \to$

$a^2-2a+1=0$

$(a-1)^2=0 \to a=1$ ✓

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۸) ۲

$x^4-7x^2-5=0 \to x^2=t \to t^2-7t-5=0 \to t=\frac{7\pm\sqrt{69}}{2}$

جمع $\to S$

ضرب $\to P$

$x=\pm\sqrt{\frac{7+\sqrt{69}}{2}}$

$2P^2-3(0)P+2(0)=59+7\sqrt{69}$

$P=-\frac{7+\sqrt{69}}{2}$ و $S=0$ پس

$2P^2=2(\frac{7+\sqrt{69}}{2})^2 \to \frac{118+14\sqrt{69}}{2}=59+7\sqrt{69}$ ✓

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۹) ۱٫۷۵

رأس $\to \frac{4}{2k}=\frac{2}{k}$

$y \to -\frac{4}{k}-6$

$=-8$

$-\frac{4}{k}-6=-\frac{8}{k}-4 \to \frac{4}{k}=2 \to k=2$ ✓

جواب ← عرض $=\frac{1}{|a|}=\frac{1}{2}$

عرض رأس رو می‌خواهیم!

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۱۰) ۲

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

$\Delta<0$

$(m+1)^2+4m(m+1)<0 \to$

$(m+1)(5m+1)<0$ ← $-1<m<-\frac{1}{5}$ ✓ هیچ عددی صحیح نیست