(A) زینب ثقفی

Subject:

Year: Month: Day: page: ( )

1 اگر α و β ریشه‌ها معادله $x^2-5x+2=0$ باشند مقدار $\frac{4\alpha+\beta^5}{5\beta^2}$

$\alpha+\beta=5 \quad \alpha\beta=2$

$\beta^2=5\beta-2 \Rightarrow \beta^3=5\beta^2-2\beta \Rightarrow 5(5\beta-2)-2\beta=23\beta-10$

$\beta^4=23\beta^2-10\beta=23(5\beta-2)-10\beta=105\beta-46$ ، $\beta^5=105\beta^2-46\beta$

$=105(5\beta-2)-46\beta$ ، $\beta^5=479\beta-210$

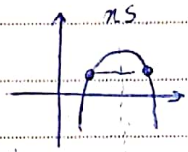
$\alpha=5-\beta$

$$\frac{4\alpha+479\beta-210}{5(5\beta-2)}=\frac{20-4\beta+479\beta-210}{25\beta-10}=\frac{475\beta-190}{25\beta-10}=\frac{95\cancel{(5\beta-2)}}{5\cancel{(5\beta-2)}}=19$$

2 نقاط $(-1.5,-4)$ و $(3,-4)$ روی یک تابع درجه دوم است مجموع صفرها تابع

ریشه‌ها

x	-1.5	3
y	-4	-4



$$\frac{-1.5+3}{2}=\frac{1.5}{2}=\frac{3}{4}=-\frac{b}{2a}$$

$$x_1+x_2=-\frac{b}{a}=\frac{3}{2}$$

3 اختلاف ریشه‌های معادله $x^2+2kx+5=0$ ، $\frac{4}{3}k$ مقدار $\left[\frac{k^2}{2}\right]$ را بیابید

$$x_2-x_1=\frac{\sqrt{\Delta}}{2|a|}=\frac{\sqrt{4k^2-(4\times1\times5)}}{2}=\frac{4}{3}k \Rightarrow \sqrt{4k^2-20}=\left(\frac{8}{3}k\right)^2$$

$$4k^2-20=\frac{64}{9}k^2 \Rightarrow \frac{36}{9}k^2-\frac{64}{9}k^2=20 \Rightarrow -\frac{28}{9}k^2=20$$

$k^2=\quad 9 \qquad \left[\frac{9}{2}\right]=4$

4 $A=(3,y) \quad B=(-5,y) \quad x_s=\frac{-5+3}{2}=-\frac{2}{2}=-1=-\frac{b}{2a}$

$y_s=1$

$\alpha^2+\beta^2=5 \qquad x_s=-1,\ (x_s,y_s)=(-1,1) \quad y=a(x-1)(x-x_2)$

$\alpha+\beta=-\frac{b}{a}=-2 \xrightarrow{\text{به توان 2}} \alpha^2+\beta^2+2\alpha\beta=4 \quad 2\alpha\beta=-1 \quad \alpha\beta=-\frac{1}{2}$

$-\frac{b}{2a}=x_s=-\frac{b}{2a}=-1 \Rightarrow -\frac{b}{a}=-2$

$$y=x^2-Sx+P \Rightarrow y=x^2+2x-\frac{1}{2}$$

$x=0 \rightarrow y=-\frac{1}{2}=\binom{0}{-\frac{1}{2}}$

۵- نموداری <= $\Delta \ngeq 0$ $\quad 25-(4\times -1\times m)\ngeq 0$ $\quad -x^2+5x+m=0$

$25+4m \ngeq 0 \quad 4m \ngeq -25 \quad m \ngeq -\frac{25}{4}$

x		α		β	
بار	$-$		$+$		$-$

$-x^2+5x+\frac{25}{4}=0$

$\hookrightarrow \times 4 \Rightarrow 4x^2-20x+25=0$

$(2x-5)^2 < \frac{9}{4}$

$\alpha\cdot\beta=\frac{c}{a}=-m$

$\alpha+\beta=-5$

$2x-5<+\frac{3}{2} \qquad 2x-5<+\frac{3}{2}$

$2x-5<-\frac{3}{2} \qquad 2x<\frac{10+3}{2},\ 2x<\frac{13}{2}$

$2x<\frac{7}{2} \quad x<\frac{7}{4} \qquad x<\frac{13}{4}$

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① min $\longrightarrow mx^2-12x+5m-1=y \qquad y_s=2,\ \frac{-\Delta}{4a}$

$\hookrightarrow$ ۲ $\rightarrow$ عرض رأس $=x_s$

② $=\frac{12^2-(4\times m(5m-1))}{4m}=2$

③ $\Rightarrow -\frac{144-20m^2+4m}{4m}=2 \Rightarrow -144+20m^2-4m=8m \qquad 20m^2-12m-144=0$

⑥ $x_s=-\frac{b}{2a}=2$

⑤ $m^2-3m-180=0 \qquad (m-\frac{15}{5})(5m-12)=0$

④ $5m^2-3m-36=0$

$m=3$ ✓ $\qquad m=-\frac{12}{5}$ ✗

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$a^2=\alpha\beta \Rightarrow \frac{c}{a}=2a-1 \qquad a^2=2a-1 \Rightarrow a^2-2a+1=0$

$(a-1)^2=0 \qquad \boxed{a=1}$

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$x^2=t \qquad t^2-7t-5=0 \overset{\Delta}{\Rightarrow} t=\frac{7\pm\sqrt{69}}{2}$ ✗

$\hookrightarrow x=\pm\sqrt{\frac{7+\sqrt{69}}{2}} \Rightarrow S \Rightarrow 0 \qquad P=-\frac{7+\sqrt{69}}{2}$

$2P^2 \Rightarrow P^2=\left(-\frac{7+\sqrt{69}}{2}\right)^2=\frac{49+69+14\sqrt{69}}{4}=2\cdot\frac{49+69+14\sqrt{69}}{4}=59+7\sqrt{69}$

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$kx^2-4x-6=-4x-4 \Rightarrow kx^2-2=0 \qquad \Delta=0$

$b^2-4ac=0 \qquad 0-\underbrace{(4\times k\times -2)}_{-8k}=0 \qquad 8k=0 \qquad k=0$

$y_s=\frac{-\Delta}{4a}=0$

Arman

$-mx^2 + mx + 1 = -m - x$

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

$b^2 - 4ac < 0 \qquad \underbrace{(m+1)^2}_{m^2+1+2m} - (4 \times \underbrace{-m \times (1+m)}_{-m-m^2}) < 0 \qquad m^2 + 1 + 2m + 4m + 4m^2 < 0$

$5m^2 + 6m + 1 < 0$

$(5m+1)(m+1) < 0 \qquad -1 < m < -0.2$

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