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بنام خدا سارینا خدایاری

۱) $x^2 - 5x + 2 = 0$

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$\frac{4\alpha + \beta^5}{5\beta^2}$

$S = \alpha + \beta = \frac{-b}{a} = \frac{5}{1} = 5$

$P = \alpha\beta = \frac{c}{a} = 2$

$\alpha^2 - 5\alpha + 2 = 0$ ادامه در صفحه بعد

$\beta^2 - 5\beta + 2 = 0$

$\frac{4\alpha}{5\beta^2} + \frac{\cancel{\beta^5}\beta^3}{5\beta^2}$

$\alpha^2 - 5\alpha = \beta^2 - 5\beta$

$\frac{4\alpha}{5\beta^2} + \frac{\beta^3}{5}$ $\frac{4\beta - 20}{5\times(\alpha-5)\times\beta}$ $\alpha(\alpha - 5) = \beta(\beta - 5)$ $\frac{\alpha}{\beta} = \frac{\beta - 5}{\alpha - 5}$

۲) $(3, -4)$, $(-1/5, -4)$

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$x_s = \frac{3 - 1/5}{2} = 0/75$

$y = ax^2 + bx + c$

$-4 = 16a - 4b + c$ $16a - 4b = \frac{9}{4}a - \frac{3}{2}b$

$-4 = \frac{9}{4}a - \frac{3}{2}b + c$ $16a - \frac{9}{4}a = 4b - \frac{3}{2}b$

$\frac{-b}{2a} = \frac{3}{4}$ $\frac{55}{4}a = \frac{5}{2}b$

$-4b = 6a$ $a = \frac{\cancel{5}}{\cancel{2}} \times \frac{-3}{\cancel{2}} \times \frac{\cancel{4}}{\cancel{55}_{11}} = \frac{-3}{11}$

محور تقارن $= \frac{-b}{a}$ $-2b = 3a$

$-2b = 3 \times \frac{-3}{11}$

$= \frac{\frac{-9}{22}}{\frac{-3}{11}} = \boxed{\frac{3}{2}}$ $b = \frac{-9}{11} \times \frac{1}{-2}$

$b = \frac{9}{22}$

۳) $x^2 + 2kx + 5 = 0$ $\frac{4}{3}k$

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$\frac{\sqrt{\Delta}}{|a|} = \sqrt{\Delta} = \sqrt{4k^2 - 4 \times 5 \times 1} = \frac{4}{3}k$

$4k^2 - 20$

$2\sqrt{k^2 - 5} = \frac{4}{3}k$ $\left[\frac{9}{2}\right] = 4$

$\sqrt{k^2 - 5} = \frac{2}{3}k$ $\left[\frac{k^2}{2}\right]$

$k^2 - 5 = \frac{4}{9}k^2$

$\frac{5}{9}k^2 = 5$

$k^2 = \cancel{5} \times \frac{9}{\cancel{5}}$ $k = \pm 3$

نسا زینب خدایاری

4) $A(3,y)$ $B(-5,y)$

3

$y_s = 1$ $x_s = \frac{3-5}{2} = -1$ $\frac{-b}{2a} = -1$

$b = 2a$

$\alpha^2 + \beta^2 = 5$ $y = a(x-h)^2 + k$ $\frac{-\Delta}{4a} = 1$

$S^2 - 2P = 5$ $y = a(x+1)^2 + 1$ $-b^2 + 4ac = 4a$

ریشه‌ها $= ?$ $y = a x|4 + 1$ $-4a^2 + 4ac = 4a$

$(\frac{-b}{a})^2 - \frac{2c}{a} = 5$ $y = a x|4 + 1$ $4a(-a+c) = 4a$

$c - a = 1$

$\frac{b^2}{a^2} - \frac{2c}{a} = 5$

$b^2 = 4a^2$

$\frac{4(c-1)^2}{(c-1)^2} - \frac{2c}{c-1} = 5$ $4(c-1)^2$

$\frac{-2c}{c-1} = 1$

$c - 1 = -2c$ $3c = 1$ $\boxed{c = \frac{1}{3}}$

5) $-x^2 + 5x + m = 0$

2

$x = \frac{5 \pm \sqrt{25 + 4m}}{2}$

$25 + 4m \geq 0 \rightarrow m \geq -6/25$

$x_{max} = \frac{5 + \sqrt{25+4m}}{2} < 4/5$

$5 + \sqrt{25 + 4m} < 9$

$\sqrt{25+4m} < 4$

$25 + 4m < 16$

$4m < -9 \rightarrow m < -\frac{9}{4}$

$-6/25 \leq m < -2/25$

مقادیر صحیح m:

$-6, -5, -4, -3$

۴ مقدار

6) $y = mx^2 - 12x + 5m - 1$

2

$\min = 2$ $y = m(\frac{6}{m})^2 - 12(\frac{6}{m}) + 5m - 1$ $m_1 = 3 \rightarrow x = \frac{6}{3} = 2$

$x = \frac{-b}{2a} = \frac{+12}{2m} = \frac{6}{m}$ $y_{min} = \frac{36}{m} - \frac{72}{m} + 5m - 1$ $m_2 = -2/4 \rightarrow x = \frac{6}{-2/4} = -2/5$

$y_{min} = \frac{-36}{m} + 5m - 1$

$2 = -\frac{36}{m} + 5m - 1$

$3 = -\frac{36}{m} + 5m$ $m_1 = 3,\ m_2 = -\frac{24}{10} = -2/4$

$3m = -36 + 5m^2$

$5m^2 - 3m - 36$ دلتا

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سرین صدایی

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7) $x^2 + 2(a+1)x + 2a - 1 = 0$

α, a, β

$\alpha \times \beta = a^2 \rightarrow 2a - 1 = a^2 \quad a^2 - 2a + 1 = 0 \quad (a-1)^2 = 0$

$\boxed{a = 1}$

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

$\alpha \times \beta = \frac{c}{a} = 2a - 1 = \alpha\beta$

8) $x^4 - 7x^2 - 5 = 0$

$t = x^2 \quad t^2 - 7t - 5 = 0$

$t = \frac{7 \pm \sqrt{69}}{2}$

$t > 0 \quad \frac{7 + \sqrt{69}}{2} \quad x = \pm\sqrt{t_1} = \pm\sqrt{\frac{7+\sqrt{69}}{2}}$

$S = x_1 + x_2 = +a - a = 0$

$P = x_1 \times x_2 = -a^2 = -\frac{7+\sqrt{69}}{2}$

$2S^3 - 3SP + 2S \rightarrow 2 \times (0)^3 - 2 \times 0 \times P + 2 \times 0 = \boxed{0}$

9) $y = kx^2 - 4x - 6 \qquad y = -4x - 2$

$x_s = \frac{-b}{2a} = \frac{2}{k} \qquad y_s = k\left(\frac{2}{k}\right)^2 - 4\left(\frac{2}{k}\right) - 6 = k\left(\frac{4}{k^2}\right) - \frac{8}{k} - 6 = \frac{4}{k} - \frac{8}{k} - 6 = -\frac{4}{k} - 6$

$a = k \quad b = -4$

۱۱۷ص

$\left(\frac{2}{k}, -\frac{4}{k} - 6\right) \rightarrow -\frac{4}{k} - 6 = -4\left(\frac{2}{k}\right) - 2$

$\frac{4}{k} - 2 = 0 \qquad k = 2$

$x_s = \frac{2}{2} = 1$

$x_s = 1$

عرض راس $\rightarrow y = -4(1) - 4 = -8$

Senobar

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

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

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

۱۰) $y=-mx^2+mx+1$ $\quad y=-m-x$ مسایل هندسه‌ای

$-mx^2+1+mx+1=0 \to -mx^2+2mx+2=0$

$\Delta>0$

$5m^2+6m+1<0$ $\quad \Delta=(2m)^2-4\times -m\times 2=4m^2+8m=4m(m+2)<0$

m		-2		0	
	$+$	0	$-$	0	$+$

$(m+1)(5m+1)<0$ $\quad -2<m<0$

$-1<m<-\frac{1}{5} \to$ جواب صحیح $\quad m\in(-2,0)$

صحیح

۱۱) $x^2-5x+3=0$ در این بازه هست

$\frac{4\alpha+\beta^5}{5\beta^2}$ $\quad \alpha+\beta=5$ $\quad \alpha\beta=3$ $\quad \beta^2=5\beta-3$

$\beta^3=\beta\times\beta^2=\beta(5\beta-3)=5\beta^2-3\beta$

$\beta^2=5\beta-3 \to \beta^3=5(5\beta-3)-3\beta=25\beta-15-3\beta=22\beta-15$

$\beta^4=\beta\times\beta^3=\beta(22\beta-15)=22\beta^2-15\beta \to \beta^4=22(5\beta-3)-15\beta=110\beta-66-15\beta$
$=95\beta-66$

$\beta^5=\beta\times\beta^4=\beta(95\beta-66)=95\beta^2-66\beta \to \beta^5=95(5\beta-3)-66\beta=475\beta-285$
$-66\beta=409\beta-285$ $\quad \alpha=5-\beta$ $\quad \beta^2=5\beta-3$

$$\frac{4(5-\beta)+(409\beta-285)}{5(5\beta-3)}=\frac{20-4\beta+409\beta-285}{5(5\beta-3)}$$

$$\frac{405\beta-265}{25\beta-15}$$ $\quad x^2-5x+3=0 \to x=\frac{5\pm\sqrt{25-12}}{2}=\frac{5\pm\sqrt{13}}{2}$

$$\boxed{\frac{4\alpha+\beta^5}{5\beta^2}=\frac{104}{9}+\frac{11\sqrt{13}}{9}}$$ $\quad \beta=\frac{5+\sqrt{13}}{2}$

خلاصه کرده اید اینست!