عرفان حاجی علی زاده — تمرین شماره ۱۶

۱۹٫۵

۱ (۲)

$\alpha = x$

$\beta = 3x$

$3x \times x = 3x^2$

$3x^2 = \frac{4}{3}$

$x^2 = \frac{4}{9}$

$x = \frac{2}{3} \quad x = -\frac{2}{3}$

$\alpha = \frac{2}{3} + \beta = 2 = \frac{8}{3} \quad a = 8$

$\alpha = -\frac{2}{3} + \beta = -2 = -\frac{8}{3} \quad a = -8$

$8 - (-8) = 16$ ✓

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۲ (۲)

$\alpha \to \frac{1}{\sqrt{\alpha}}$

$\beta \to \frac{1}{\sqrt{\beta}}$

$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = 5$

$\frac{\sqrt{\beta} + \sqrt{\alpha}}{\sqrt{\alpha\beta}} = 5$

$\sqrt{\beta} + \sqrt{\alpha} = 5\underbrace{\sqrt{\alpha\beta}}_{\frac{1}{36}}$

$\sqrt{\beta} + \sqrt{\alpha} = \frac{5}{6}$

$\beta + \alpha + 2\sqrt{\alpha\beta} = \frac{25}{36}$

$\beta + \alpha = \frac{13}{36}$

$m + 14 = 13 \quad m = -1$

$-x^2 + 3x + 2 = 0$

$\boxed{\alpha\beta = -2}$ ✓

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۳ (۲)

$ax^3 + bx^2 + cx + d = 0$

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

$\alpha\beta + \alpha T + \beta T = \frac{c}{a}$

$\alpha\beta T = -\frac{d}{a}$

$a = 4$

$b = k$

$c = -9$

$d = -2$

$\alpha + \beta = 1$

$\alpha\beta = -2$

$\alpha + \beta + T = -\frac{k}{4}$

$T = -\frac{k}{4} - 1$

$\alpha\beta T = \frac{1}{2}$

$-2(T) = \frac{1}{2}$

$T = -\frac{1}{4}$

$-\frac{k}{4} - 1 = -\frac{1}{4}$

$-\frac{k}{4} = 1 - \frac{1}{4} = \frac{3}{4}$

$\boxed{k = -3}$ ✓

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۴ (۲)

$2.5\alpha^2 + 2.5\beta^2 + 0.5\alpha^2 - 0.5\beta^2$

$2.5(36 - 2a) + 0.5(\alpha^2 - \beta^2)$

$90 - 5a + 3\sqrt{36 - 4a}$

$a = 1$ ✓

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۵ (۱٫۵)

$t^2 - 7t - 5 = 0$

علامت b رو تغییر نمیدی دیگه!

$\frac{7 + \sqrt{69}}{2}$ ✓ $\qquad \frac{7 - \sqrt{69}}{2}$ ✗

$= x^2 \qquad = x^2$

باید جذر بگیری!

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

$b = \mp\sqrt{5}$

$s = 0$

$2p^2 = 2 \times \frac{-49 - 7\sqrt{69} - 7\sqrt{69} - 69}{4} = \frac{-118 - 14\sqrt{69}}{2} = +59 + 7\sqrt{69}$

$\alpha+\beta = \frac{-a}{2a} = \frac{-1}{2}$ $\quad\quad$ $\left[\frac{-6\times 1}{4}\right] = -2$ $\quad$ ۲

$\alpha+\beta+1 = \frac{-1}{2}+1 = \frac{1}{2} = \frac{a}{2}$ $\quad a=1$ $\quad$ ۶

$\alpha\beta = -3$ $\quad\quad$ $\frac{b}{2} = -3$ $\quad b=-6$

$(\alpha+0.5)(\beta+0.5) = \alpha\beta+0.5\alpha+0.5\beta+0.25 = -3-\frac{1}{4}+\frac{1}{4} = -3$

$20\alpha^2+20\beta^2+20\beta^2-20\beta = 17$ $\quad\quad$ $20a+60b = 17a$ $\quad$ ۲

$20(\alpha^2+\beta^2)+20\beta(\underbrace{\beta-1}_{-\alpha}) = 17$ $\quad\quad$ $60b = -3a$

$-20b = a$

$\alpha+\beta=1$ $\quad\quad$ $20\left(1+\frac{2b}{a}\right)+20\left(\frac{b}{a}\right)$ $\quad\quad$ $-20bx^2+20bx-b=0$ $\quad$ ۷

$\beta-1=-\alpha$

$20\left(1+\frac{3b}{a}\right) = 17$ $\quad\quad$ $\sqrt{S^2-4P} = \sqrt{1-\frac{1}{5}} = \sqrt{\frac{4}{5}}$

$20+\frac{60b}{a} = 17$ $\quad\quad$ $\boxed{\frac{2}{\sqrt{5}}}$

$x \quad x+2 \quad x^2+2x=a \quad 2x+2=a+1$ $\quad\quad$ $x^2+2x=2x+1$ $\quad x^2-1=0$ $\quad x=1$

$y \quad y+2 \quad y^2+2y=b \quad 2y+2=3a+1$ $\quad\quad$ $x=-1$

$1, 3$ $\quad$ ۲

$2y+1 = 6x+3$ $\quad$ ۸

$2y = 6x+2$ $\quad\quad$ $(4\times 6)-(1\times 3) = 21$

$y = 3x+1$ $\quad\quad$ $4, 6$

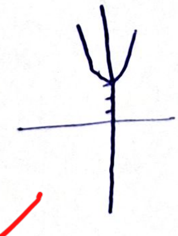
$y = 4$

۲

$\alpha^2+\beta^2 = S^2-2P = 1+2+2m^2$

$2m^2+3 = 7$ $\quad$ ۹

$\frac{-b}{2a} = 0$ $\quad y=3$



$\boxed{3}$

$\frac{-b}{2a} = -1$ $\quad\quad$ ax^2+bx+c $\quad\quad$ S^2-2P $\quad\quad$ $P = \frac{a+1}{a}$ $\quad$ ۲

$b = 2a$ $\quad\quad$ $ax^2+2ax+c$ $\quad\quad$ $4+\frac{-2a-2}{a} = 5$ $\quad$ ۱۰

$a-2a+c = 1$

$c = 1+a$ $\quad\quad$ $a = -2a-2$

$3a = -2$

$ax^2+2ax+a+1$ $\quad\quad$ $a = \frac{-2}{3}$

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