

高2R5



2次方程式 $x^2 + 3x + 1 = 0$ の2つの解を α, β ($\alpha > \beta$) するとき、次の式の値を求めよ。

(1) $\alpha + \beta$

(2) $\alpha\beta$

(3) $\alpha^2 + \beta^2$

(4) $\alpha^3 + \beta^3$

(5) $\frac{1}{\alpha} + \frac{1}{\beta}$

(6) $\alpha - \beta$

1) $\alpha + \beta = \underline{-3}$

2) $\alpha\beta = \underline{1}$

(3) $\alpha^2 + \beta^2 = (\alpha + \beta)^2 - 2\alpha\beta$
 $= (-3)^2 - 2 \cdot 1$
 $= \underline{7}$

(4) $\alpha^3 + \beta^3 = (\alpha + \beta)(\alpha^2 - \alpha\beta + \beta^2)$
 $= -3 \cdot (7 - 1)$
 $= \underline{-18}$

(5) $\frac{1}{\alpha} + \frac{1}{\beta} = \frac{\alpha + \beta}{\alpha\beta}$
 $= \frac{-3}{1} = \underline{-3}$

16) $(\alpha - \beta)^2 = (\alpha + \beta)^2 - 4\alpha\beta$
 $= (-3)^2 - 4 \cdot 1$
 $= 5$

$\alpha - \beta = \pm\sqrt{5}$

$\alpha > \beta$ 故に $\alpha - \beta = \underline{\sqrt{5}}$