

2011年第7問

7  $\sin \theta - \cos \theta = \frac{\sqrt{2}}{3}$  ( $0 \leq \theta \leq \frac{\pi}{2}$ ) のとき,  $6(\sin \theta + \cos \theta)$  の値を求めよ.

$$(\sin \theta - \cos \theta)^2 = \frac{2}{9}$$

$$\therefore 1 - 2 \sin \theta \cos \theta = \frac{2}{9} \quad \therefore \sin \theta \cos \theta = \frac{7}{18} \quad \dots \textcircled{1}$$

$$\begin{aligned} (\sin \theta + \cos \theta)^2 &= 1 + 2 \sin \theta \cos \theta \\ &= \frac{16}{9} \end{aligned}$$

$$0 \leq \theta \leq \frac{\pi}{2} \text{ より, } \sin \theta + \cos \theta \geq 0 \text{ であり, } \sin \theta + \cos \theta = \frac{4}{3}$$

$$\therefore 6(\sin \theta + \cos \theta) = 8$$