

$0 < \alpha < \frac{\pi}{2}$ で, $\sin \alpha = \frac{3}{5}$ のとき, 次の値を求めよ。

(1) $\cos \alpha$

(2) $\sin 2\alpha$

(3) $\cos 2\alpha$

$$\begin{aligned} (1) \quad \cos^2 \alpha &= 1 - \sin^2 \alpha \\ &= 1 - \frac{9}{25} \\ &= \frac{16}{25} \end{aligned}$$

α の範囲より $\cos \alpha > 0$.

$$\cos \alpha = \frac{4}{5}$$

$$\begin{aligned} (2) \quad \sin 2\alpha &= 2 \sin \alpha \cos \alpha \\ &= 2 \cdot \frac{3}{5} \cdot \frac{4}{5} \\ &= \frac{24}{25} \end{aligned}$$

$$\begin{aligned} (3) \quad \cos 2\alpha &= \cos^2 \alpha - \sin^2 \alpha \\ &= \frac{16}{25} - \frac{9}{25} \\ &= \frac{7}{25} \end{aligned}$$