問題

問題１．次の式を $r\sin(\theta+\alpha)$ の形に表せ。ただし、$r>0, -\pi<\alpha<\pi$ とする。

(1) $\sin\theta+\sqrt{3}\cos\theta$

(2) $\sin\theta-\cos\theta$

(3) $-\sqrt{3}\sin\theta+\cos\theta$

(4) $-\sin\theta-\cos\theta$

(5) $-\sin\theta+\sqrt{3}\cos\theta$

(6) $\sqrt{3}\sin\theta-\cos\theta$

(7) $3\sin\theta-\sqrt{3}\cos\theta$

(8) $-2\sin\theta+2\cos\theta$

(9) $\dfrac{1}{2}\sin\theta+\dfrac{1}{2}\cos\theta$

(10) $2\sin\theta-2\sqrt{3}\cos\theta$

問題２．次の式を $r\sin(\theta+\alpha)$ の形に表せ。ただし、$r>0, -\pi<\alpha<\pi$ とする。

(1) $3\sin\theta+4\cos\theta$

(2) $-6\sin\theta+8\cos\theta$

(3) $2\sin\theta-4\cos\theta$

(4) $-3\sin\theta-\cos\theta$

練習

練習１．次の式を $r\sin(\theta+\alpha)$ の形に表せ。ただし、$r>0, -\pi<\alpha<\pi$ とする。

(1) $\sin\theta-\sqrt{3}\cos\theta$

(2) $\sin\theta+\cos\theta$

(3) $-\sqrt{3}\sin\theta-\cos\theta$

(4) $-\sin\theta+\cos\theta$

(5) $-\sin\theta-\sqrt{3}\cos\theta$

(6) $\sqrt{3}\sin\theta+\cos\theta$

(7) $2\sin\theta+2\sqrt{3}\cos\theta$

(8) $\sqrt{2}\sin\theta-\sqrt{2}\cos\theta$

(9) $-3\sin\theta+3\sqrt{3}\cos\theta$

(10) $\dfrac{\sqrt{3}}{2}\sin\theta-\dfrac{1}{2}\cos\theta$

練習２．次の式を $r\sin(\theta+\alpha)$ の形に表せ。ただし、$r>0, -\pi<\alpha<\pi$ とする。

(1) $12\sin\theta+5\cos\theta$

(2) $-4\sin\theta+3\cos\theta$

(3) $2\sin\theta-3\cos\theta$

(4) $-\sin\theta-2\cos\theta$

解答

問題１.

(1) $2\sin(\theta+\frac{\pi}{3})$　(2) $\sqrt{2}\sin(\theta-\frac{\pi}{4})$　(3) $2\sin(\theta+\frac{5}{6}\pi)$　(4) $\sqrt{2}\sin(\theta-\frac{3}{4}\pi)$

(5) $2\sin(\theta+\frac{2}{3}\pi)$　(6) $2\sin(\theta-\frac{\pi}{6})$　(7) $2\sqrt{3}\sin(\theta-\frac{\pi}{6})$　(8) $2\sqrt{2}\sin(\theta+\frac{3}{4}\pi)$

(9) $\frac{\sqrt{2}}{2}\sin(\theta+\frac{\pi}{4})$　(10) $4\sin(\theta-\frac{\pi}{3})$

問題２.

(1) $5\sin(\theta+\alpha)$　ただし、$\cos\alpha=\frac{3}{5},\sin\alpha=\frac{4}{5}$

(2) $10\sin(\theta+\alpha)$　ただし、$\cos\alpha=-\frac{3}{5},\sin\alpha=\frac{4}{5}$

(3) $2\sqrt{5}\sin(\theta+\alpha)$　ただし、$\cos\alpha=\frac{1}{\sqrt{5}},\sin\alpha=-\frac{2}{\sqrt{5}}$

(4) $\sqrt{10}\sin(\theta+\alpha)$　ただし、$\cos\alpha=-\frac{3}{\sqrt{10}},\sin\alpha=-\frac{1}{\sqrt{10}}$

練習１.

(1) $2\sin(\theta-\frac{\pi}{3})$　(2) $\sqrt{2}\sin(\theta+\frac{\pi}{4})$　(3) $2\sin(\theta-\frac{5}{6}\pi)$　(4) $\sqrt{2}\sin(\theta+\frac{3}{4}\pi)$

(5) $2\sin(\theta-\frac{2}{3}\pi)$　(6) $2\sin(\theta+\frac{\pi}{6})$　(7) $4\sin(\theta+\frac{\pi}{3})$　(8) $2\sin(\theta-\frac{\pi}{4})$

(9) $6\sin(\theta+\frac{2}{3}\pi)$　(10) $\sin(\theta-\frac{\pi}{6})$

練習２.

(1) $13\sin(\theta+\alpha)$　ただし、$\cos\alpha=\frac{12}{13},\sin\alpha=\frac{5}{13}$

(2) $5\sin(\theta+\alpha)$　ただし、$\cos\alpha=-\frac{4}{5},\sin\alpha=\frac{3}{5}$

(3) $\sqrt{13}\sin(\theta+\alpha)$　ただし、$\cos\alpha=\frac{2}{\sqrt{13}},\sin\alpha=-\frac{3}{\sqrt{13}}$

(4) $\sqrt{5}\sin(\theta+\alpha)$　ただし、$\cos\alpha=-\frac{1}{\sqrt{5}},\sin\alpha=-\frac{2}{\sqrt{5}}$