

問題

問題 1. $0 \leq \theta < 2\pi$ のとき、次の方程式を解け。

$$(1) \sin\left(\theta + \frac{\pi}{6}\right) = \frac{1}{\sqrt{2}}$$

$$(2) \cos\left(\theta - \frac{\pi}{4}\right) = \frac{1}{2}$$

$$(3) \cos\left(\theta + \frac{\pi}{4}\right) = \frac{\sqrt{3}}{2}$$

$$(4) \sin\left(\theta + \frac{\pi}{3}\right) = \frac{1}{2}$$

$$(5) \sin\left(\theta - \frac{\pi}{3}\right) = -\frac{1}{\sqrt{2}}$$

$$(6) \cos\left(\theta - \frac{2}{3}\pi\right) = \frac{1}{2}$$

問題 2. $0 \leq \theta < 2\pi$ のとき、次の不等式を解け。

$$(1) \sin\left(\theta - \frac{\pi}{4}\right) > \frac{\sqrt{3}}{2}$$

$$(2) \cos\left(\theta + \frac{\pi}{6}\right) < -\frac{1}{2}$$

$$(3) \cos\left(\theta + \frac{\pi}{3}\right) \geq \frac{\sqrt{3}}{2}$$

$$(4) \sin\left(\theta + \frac{2}{3}\pi\right) \leq \frac{1}{\sqrt{2}}$$

$$(5) \sin\left(\theta - \frac{\pi}{4}\right) < -\frac{1}{2}$$

$$(6) \cos\left(\theta - \frac{\pi}{4}\right) \leq \frac{\sqrt{3}}{2}$$

練習

練習 1. $0 \leq \theta < 2\pi$ のとき、次の方程式を解け。

$$(1) \sin\left(\theta - \frac{\pi}{4}\right) = \frac{\sqrt{3}}{2}$$

$$(2) \cos\left(\theta + \frac{\pi}{6}\right) = -\frac{1}{2}$$

$$(3) \cos\left(\theta + \frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}$$

$$(4) \sin\left(\theta + \frac{2}{3}\pi\right) = \frac{1}{\sqrt{2}}$$

$$(5) \sin\left(\theta - \frac{\pi}{4}\right) = -\frac{1}{2}$$

$$(6) \cos\left(\theta - \frac{\pi}{4}\right) = \frac{\sqrt{3}}{2}$$

練習 2. $0 \leq \theta < 2\pi$ のとき、次の不等式を解け。

$$(1) \sin\left(\theta + \frac{\pi}{6}\right) > \frac{1}{\sqrt{2}}$$

$$(2) \cos\left(\theta - \frac{\pi}{4}\right) < \frac{1}{2}$$

$$(3) \cos\left(\theta + \frac{\pi}{4}\right) \leq \frac{\sqrt{3}}{2}$$

$$(4) \sin\left(\theta + \frac{\pi}{3}\right) \geq \frac{1}{2}$$

$$(5) \sin\left(\theta - \frac{\pi}{3}\right) \geq -\frac{1}{\sqrt{2}}$$

$$(6) \cos\left(\theta - \frac{2}{3}\pi\right) < \frac{1}{2}$$

解答

問題 1.

$$(1) \theta = \frac{\pi}{12}, \frac{7}{12}\pi \quad (2) \theta = \frac{7}{12}\pi, \frac{23}{12}\pi \quad (3) \theta = \frac{19}{12}\pi, \frac{23}{12}\pi \quad (4) \theta = \frac{\pi}{2}, \frac{11}{6}\pi$$

$$(5) \theta = \frac{\pi}{12}, \frac{19}{12}\pi \quad (6) \theta = \frac{\pi}{3}, \pi$$

問題 2.

$$(1) \frac{7}{12}\pi < \theta < \frac{11}{12}\pi \quad (2) \frac{\pi}{2} < \theta < \frac{7}{6}\pi \quad (3) \frac{3}{2}\pi \leq \theta \leq \frac{11}{6}\pi$$

$$(4) \frac{\pi}{12}\pi \leq \theta \leq \frac{19}{12}\pi \quad (5) 0 \leq \theta < \frac{\pi}{12}, \frac{19}{12}\pi < \theta < 2\pi \quad (6) 0 \leq \theta \leq \frac{\pi}{12}, \frac{5}{12}\pi \leq \theta < 2\pi$$

練習 1.

$$(1) \theta = \frac{7}{12}\pi, \frac{11}{12}\pi \quad (2) \theta = \frac{\pi}{2}\pi, \frac{7}{6}\pi \quad (3) \theta = \frac{3}{2}\pi, \frac{11}{6}\pi \quad (4) \theta = \frac{\pi}{12}, \frac{19}{12}\pi$$

$$(5) \theta = \frac{\pi}{12}, \frac{17}{12}\pi \quad (6) \theta = \frac{\pi}{12}, \frac{5}{12}\pi$$

練習 2.

$$(1) \frac{\pi}{12} < \theta < \frac{7}{12}\pi \quad (2) \frac{7}{12}\pi < \theta < \frac{23}{12}\pi \quad (3) 0 \leq \theta \leq \frac{19}{12}\pi, \frac{23}{12}\pi \leq \theta < 2\pi$$

$$(4) 0 \leq \theta \leq \frac{\pi}{2}, \frac{11}{6}\pi \leq \theta < 2\pi \quad (5) \frac{\pi}{12} \leq \theta \leq \frac{19}{12}\pi \quad (6) 0 \leq \theta < \frac{\pi}{3}, \pi < \theta < 2\pi$$