

問題

問題 1. $0 \leq \theta < 2\pi$ のとき、次の方程式を解け。また、 θ に制限がないときの解を求めよ。

(1) $\sin \theta = -\frac{1}{\sqrt{2}}$

(2) $2 \sin \theta - 1 = 0$

(3) $2 \cos \theta = 1$

(4) $\cos \theta = -\frac{\sqrt{3}}{2}$

(5) $\tan \theta = -1$

(6) $\sqrt{3} \tan \theta - 1 = 0$

問題 2. $0 \leq \theta < 2\pi$ 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) $\cos \left(\theta - \frac{2}{3}\pi \right) = \frac{1}{2}$

練習

練習 1. $0 \leq \theta < 2\pi$ のとき、次の方程式を解け。また、 θ に制限がないときの解を求めよ。

(1) $\sin \theta = -\frac{\sqrt{3}}{2}$

(2) $\sqrt{2} \sin \theta - 1 = 0$

(3) $\sqrt{2} \cos \theta + 1 = 0$

(4) $\cos \theta = \frac{\sqrt{3}}{2}$

(5) $\tan \theta = \sqrt{3}$

(6) $\sqrt{3} \tan \theta + 1 = 0$

練習 2. $0 \leq \theta < 2\pi$ 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) $\cos \left(\theta - \frac{\pi}{4} \right) = \frac{\sqrt{3}}{2}$

解答

問題 1. (n は整数)

$$(1) \theta = \frac{5}{4}\pi, \frac{7}{4}\pi, \theta = \frac{5}{4}\pi + 2n\pi, \frac{7}{4}\pi + 2n\pi \quad (2) \theta = \frac{\pi}{6}, \frac{5}{6}\pi, \theta = \frac{\pi}{6} + 2n\pi, \frac{5}{6}\pi + 2n\pi$$

$$(3) \theta = \frac{\pi}{3}, \frac{5}{3}\pi, \theta = \frac{\pi}{3} + 2n\pi, \frac{5}{3}\pi + 2n\pi \quad (4) \theta = \frac{5}{6}\pi, \frac{7}{6}\pi, \theta = \frac{5}{6}\pi + 2n\pi, \frac{7}{6}\pi + 2n\pi$$

$$(5) \theta = \frac{3}{4}\pi, \frac{7}{4}\pi, \theta = \frac{3}{4}\pi + n\pi \quad (6) \theta = \frac{\pi}{6}, \frac{7}{6}\pi, \theta = \frac{\pi}{6} + n\pi$$

問題 2.

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

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

練習 1. (n は整数)

$$(1) \theta = \frac{4}{3}\pi, \frac{5}{3}\pi, \theta = \frac{4}{3}\pi + 2n\pi, \frac{5}{3}\pi + 2n\pi \quad (2) \theta = \frac{\pi}{4}, \frac{3}{4}\pi, \theta = \frac{\pi}{4} + 2n\pi, \frac{3}{4}\pi + 2n\pi$$

$$(3) \theta = \frac{3}{4}\pi, \frac{5}{4}\pi, \theta = \frac{3}{4}\pi + 2n\pi, \frac{5}{4}\pi + 2n\pi \quad (4) \theta = \frac{\pi}{6}, \frac{11}{6}\pi, \theta = \frac{\pi}{6} + 2n\pi, \frac{11}{6}\pi + 2n\pi$$

$$(5) \theta = \frac{\pi}{3}, \frac{4}{3}\pi, \theta = \frac{\pi}{3} + n\pi \quad (6) \theta = \frac{5}{6}\pi, \frac{7}{6}\pi, \theta = \frac{5}{6}\pi + n\pi$$

練習 2.

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

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