

## 第5章 3. 「弧度法」 第1回

### 解答

1. (1)  $\frac{2}{3}\pi$                       (2)  $\frac{2}{9}\pi$                       (3)  $\frac{2}{5}\pi$                       (4)  $\frac{10}{9}\pi$                       (5)  $-\frac{\pi}{2}$
2. (1)  $30^\circ$                       (2)  $135^\circ$                       (3)  $126^\circ$                       (4)  $420^\circ$                       (5)  $-150^\circ$
3. (1)  $\frac{15}{2}\pi$  cm                      (2)  $\frac{45}{2}\pi$  cm<sup>2</sup>
4. (1)  $\frac{3}{4}\pi$                       (2)  $24\pi$  cm<sup>2</sup>
5. (1) 9 cm                      (2)  $6\pi$  cm

### 解説

1.  $\alpha^\circ = \theta$  ラジアン  $\Rightarrow \theta = \alpha \times \frac{\pi}{180}$
- (1)  $120 \times \frac{\pi}{180} = \frac{2}{3}\pi$                       (2)  $40 \times \frac{\pi}{180} = \frac{2}{9}\pi$                       (3)  $72 \times \frac{\pi}{180} = \frac{2}{5}\pi$
- (4)  $200 \times \frac{\pi}{180} = \frac{10}{9}\pi$                       (5)  $-90 \times \frac{\pi}{180} = -\frac{\pi}{2}$
2.  $\theta$  ラジアン  $= \alpha^\circ \Rightarrow \alpha = \theta \times \frac{180}{\pi}$
- (1)  $\frac{\pi}{6} \times \frac{180}{\pi} = 30^\circ$                       (2)  $\frac{3}{4}\pi \times \frac{180}{\pi} = 135^\circ$                       (3)  $\frac{7}{10}\pi \times \frac{180}{\pi} = 126^\circ$
- (4)  $\frac{7}{3}\pi \times \frac{180}{\pi} = 420^\circ$                       (5)  $-\frac{5}{6}\pi \times \frac{180}{\pi} = -150^\circ$
3. 半径  $r$ , 中心角  $\theta$  ラジアンの扇形の弧の長さ  $l$ , 面積  $S \Rightarrow l = r\theta, S = \frac{1}{2}r^2\theta$
- (1)  $l = 6 \times \frac{5}{4}\pi = \frac{15}{2}\pi$ (cm)                      (2)  $S = \frac{1}{2} \times 6^2 \times \frac{5}{4}\pi = \frac{45}{2}\pi$ (cm<sup>2</sup>)
4. (1)  $l = r\theta$  より  $6\pi = 8\theta$ . よって  $\theta = \frac{6\pi}{8} = \frac{3}{4}\pi$                       (2)  $S = \frac{1}{2} \times 8^2 \times \frac{3}{4}\pi = 24\pi$ (cm<sup>2</sup>)
5. (1)  $S = \frac{1}{2}r^2\theta$  より  $27\pi = \frac{1}{2} \times r^2 \times \frac{2}{3}\pi$ . よって  $r^2 = 81$ ,  $r = 9$ (cm)
- (2)  $l = 9 \times \frac{2}{3}\pi = 6\pi$ (cm)