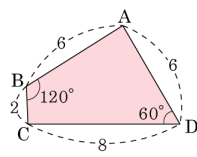


1. 다음 그림의 □ABCD 의 넓이는?



- ① $9 + \sqrt{2}$ ② $10 + \sqrt{2}$ ③ $12\sqrt{2}$
④ $14\sqrt{2}$ ⑤ $15\sqrt{3}$

해설

따라서

□ABCD

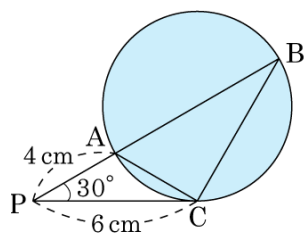
$= \triangle ABC + \triangle ACD$

$$= \frac{1}{2} \times 2 \times 6 \times \sin 120^\circ + \frac{1}{2} \times 6 \times 8 \times \sin 60^\circ$$

$$= 6 \times \frac{\sqrt{3}}{2} + 24 \times \frac{\sqrt{3}}{2}$$

$$= 3\sqrt{3} + 12\sqrt{3} = 15\sqrt{3}$$

2. 다음 그림에서 $\overline{PC}$ 는 원의 접선이고, $\overline{PB}$ 는 할선이다. $\angle P = 30^\circ$, $\overline{PA} = 4\text{cm}$, $\overline{PC} = 6\text{cm}$ 일 때, $\triangle PBC$ 의 넓이는?



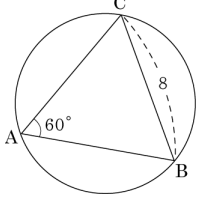
- ① $\frac{3\sqrt{3}}{2}\text{cm}^2$ ② $2\sqrt{3}\text{cm}^2$ ③ $\frac{27}{2}\text{cm}^2$
 ④ $4\sqrt{3}\text{cm}^2$ ⑤ $\frac{\sqrt{3}}{4}\text{cm}^2$

해설

$\overline{AB} = x$ 라 하면 $\overline{PA} \cdot \overline{PB} = \overline{PC}^2$ 에서 $4(4+x) = 36$, $4+x = 9$ 이고, $x = 5\text{cm}$ 이다.

$$\therefore \triangle PBC = \frac{1}{2} \times 6 \times 9 \times \sin 30^\circ = \frac{27}{2} (\text{cm}^2)$$

3. $\triangle ABC$ 에서 $\angle A = 60^\circ$, $\overline{BC} = 8$ 일 때 $\triangle ABC$ 의 외접원의 반지름의 길이를 구하여라.



▶ 답 : cm

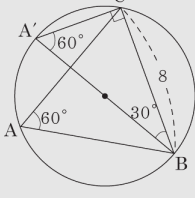
▷ 정답 : $\frac{8\sqrt{3}}{3}$ cm

해설

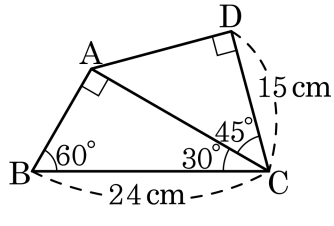
$$\cos 30^\circ = \frac{8}{\overline{A'B}}, \quad \overline{A'B} = \frac{8}{\cos 30^\circ} \quad \overline{A'B} = 8 \div \frac{\sqrt{3}}{2} = \frac{16\sqrt{3}}{3} \text{ (cm)}$$

∴ $\overline{A'B}$ 가 지름이므로 반지름은

$$\frac{16\sqrt{3}}{3} \times \frac{1}{2} = \frac{8\sqrt{3}}{3} \text{ (cm) 이다.}$$



4. 다음 그림과 같은 □ABCD 의 넓이를 구하여라.



- ① $72 + 45\sqrt{2}(\text{cm}^2)$
- ② $72\sqrt{2} + 45\sqrt{3}(\text{cm}^2)$
- ③ $72\sqrt{2} + 45(\text{cm}^2)$
- ④ $72\sqrt{2} + 45\sqrt{6}(\text{cm}^2)$
- ⑤ $72\sqrt{3} + 45\sqrt{6}(\text{cm}^2)$

해설

$$\sin 60^\circ = \frac{\overline{AC}}{\overline{BC}} = \frac{\overline{AC}}{24} \Rightarrow \frac{\overline{AC}}{24} = \frac{\sqrt{3}}{2}$$
$$\therefore \overline{AC} = 12\sqrt{3}(\text{cm})$$
$$(\square ABCD \text{의 넓이}) = \triangle ABC + \triangle ACD$$
$$= \frac{1}{2} \times 24 \times 12\sqrt{3} \times \sin 30^\circ + \frac{1}{2} \times 12\sqrt{3} \times 15 \times \sin 45^\circ$$
$$= \frac{1}{2} \times 24 \times 12\sqrt{3} \times \frac{1}{2} + \frac{1}{2} \times 12\sqrt{3} \times 15 \times \frac{\sqrt{2}}{2}$$
$$= 72\sqrt{3} + 45\sqrt{6}(\text{cm}^2)$$