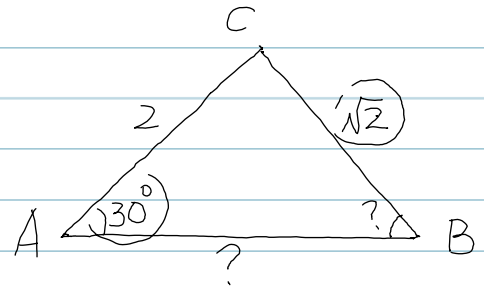


正弦定律

(1) 在 $\triangle ABC$ 中 已知 $\angle A = 30^\circ$, $a = \overline{BC} = \sqrt{2}$, $b = \overline{CA} = 2$
 試求 $\angle B = ?$ $\angle C = ?$ $c = \overline{AB} = ?$ 外接圓半徑 = ?

Sol. 正弦定律

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R$$



$$\frac{\sqrt{2}}{\sin 30^\circ} = \frac{2}{\sin B} \quad \sin B = \frac{1}{\sqrt{2}} \quad B = 45^\circ \text{ 或 } 135^\circ$$

(1) $\angle B = 45^\circ$, $\angle C = 180^\circ - (45^\circ + 30^\circ) = 105^\circ$

(2) $\angle B = 135^\circ$, $\angle C = 180^\circ - (135^\circ + 30^\circ) = 15^\circ$

(3) $\frac{\sqrt{2}}{(\frac{1}{2})} = \frac{c}{\sin 15^\circ}$ $c = \sqrt{3} - 1$, $\frac{\sqrt{2}}{\frac{1}{2}} = \frac{c}{\sin 105^\circ}$ $c = \sqrt{3} + 1$
 $R = \sqrt{2}$

(2) 如圖所示, ABCD 為圓內接四邊形:

若 $\angle DBC = 30^\circ$, $\angle ABD = 45^\circ$, $\overline{CD} = 6$, 則 $\overline{AD} = ?$

$$\frac{x}{\sin 45^\circ} = 2R = \frac{6}{\sin 30^\circ}$$

$$x = \frac{6}{(\frac{1}{2})} \cdot \sin 45^\circ = 12 \cdot \frac{\sqrt{2}}{2} = 6\sqrt{2}$$

