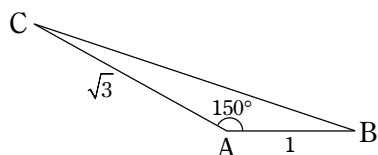


中3数学C 1学期 復習テスト解答 1学期-3

1

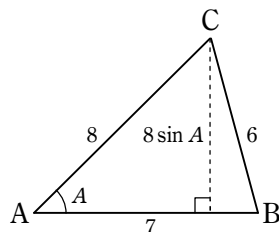


余弦定理より,

$$\begin{aligned} BC^2 &= AB^2 + AC^2 - 2 \cdot AB \cdot AC \cdot \cos A \\ &= 1^2 + (\sqrt{3})^2 - 2 \cdot 1 \cdot \sqrt{3} \cdot \left(-\frac{\sqrt{3}}{2}\right) = 7 \end{aligned}$$

$$\therefore BC = \boxed{\sqrt{7}} (> 0)$$

2



(1) 余弦定理より,

$$\begin{aligned} \cos A &= \frac{AB^2 + AC^2 - BC^2}{2 \cdot AB \cdot AC} \\ &= \frac{7^2 + 8^2 - 6^2}{2 \cdot 7 \cdot 8} = \frac{77}{2 \cdot 7 \cdot 8} = \boxed{\frac{11}{16}} \end{aligned}$$

(2) $(\cos A)^2 + (\sin A)^2 = 1$ なので,

$$\begin{aligned} (\sin A)^2 &= 1 - (\cos A)^2 \\ &= 1 - \left(\frac{11}{16}\right)^2 = \frac{16^2 - 11^2}{16^2} = \frac{27 \cdot 5}{16^2} \end{aligned}$$

であり, $0^\circ < A < 180^\circ$ より $\sin A > 0$ であるから,

$$\sin A = \frac{3\sqrt{3} \cdot \sqrt{5}}{16} = \boxed{\frac{3\sqrt{15}}{16}}$$

(3) 三角形 ABC の, 辺 AB を底辺としたときの高さは $AC \cdot \sin A$ なので,

$$\begin{aligned} S &= \frac{1}{2} \cdot AB \cdot (AC \cdot \sin A) \\ &= \frac{1}{2} \cdot 7 \cdot 8 \cdot \frac{3\sqrt{15}}{16} = \boxed{\frac{21\sqrt{15}}{4}} \end{aligned}$$