

● 第 384 回 <追加>問題解答<三角定規>

図のように点 F, G, H を定める。

図において、

$$\angle AGC = \angle AFC = \angle R \cdots \textcircled{1}$$

(\because 直径 AC の上に立つ円周角)

また、 $\angle BFC = \angle BHC = \angle R \cdots \textcircled{2}$

(\because 直径 BC の上に立つ円周角)

$\triangle ECF$ と $\triangle AEG$ において

$$\angle CFE = \angle AGE = \angle R \quad (\because \textcircled{1})$$

$$\angle CEF = \angle AEG \quad (\text{共有})$$

$\therefore \triangle ECF \sim \triangle AEG$ (2 角相等)

$$\therefore \angle ECF = \angle EAG = (1/2) \angle A \quad (\bullet \text{印}) \cdots \textcircled{3}$$

$\triangle DCF$ と $\triangle DBH$ において

$$\angle DFC = \angle DHB = \angle R \quad (\because \textcircled{2})$$

$$\angle CDF = \angle BDH \quad (\text{共有})$$

$\therefore \triangle DCF \sim \triangle DBH$ (\because 2 角相等)

$$\therefore \angle DCF = \angle DBH = (1/2) \angle B \quad (\blacktriangle \text{印}) \cdots \textcircled{4}$$

$\angle A + \angle B = \angle R$ ($\bullet \bullet \blacktriangle \blacktriangle$) だから

$$\angle DCE = \angle DCF + \angle ECF = (1/2) (\angle A + \angle B) = 45^\circ \quad (\bullet \blacktriangle) \quad (\because \textcircled{3}\textcircled{4})$$

[証明了]

