

16, 13.12.2019

①

$$\overline{CQ} = \overline{PC} \cdot \frac{\sqrt{3}}{2}$$

$$\overline{AC} = \overline{CQ} \cdot \frac{\sqrt{3}}{2} = \overline{PC} \cdot \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{3}}{2} = \overline{PC} \cdot \frac{3}{4} = \frac{30}{4} = \frac{15}{2}$$

$$A = \frac{\overline{AC}^2 \cdot \sqrt{3}}{4} = \frac{\left(\frac{15}{2}\right)^2 \cdot \sqrt{3}}{4} = 24.356'964 \dots$$

$$\overline{QC} \approx 8.66 \text{ cm}$$

$$\overline{AC} = 7.5 \text{ cm}$$

$$\overline{BC} = 6.495 \text{ cm}$$

$$\approx 24.357 \text{ cm}^2$$

$$A_{1/2} = 12.1784822 \dots \approx \underline{\underline{12.18 \text{ cm}^2}}$$

②

Fläche grosses Quadrat = 36 cm^2 ($= 4 \cdot 9 \text{ cm}^2$)

8-mal Fläche rotes Quad. = 36 cm^2

$$\hookrightarrow \underline{\underline{4.5 \text{ cm}^2}}$$

oder: (noch einfacher)

$\triangle ABC$ hat doppelte Fläche wie $\triangle ABC$

$$\overline{ED} = \sqrt{19 \cdot 16}$$

$$\approx \sqrt{144} = 12$$

③

$$\overline{AD}^2 = \overline{AE} \cdot \overline{EC} = 9 \cdot 25 = 225$$

$$\overline{AD} = 15 \text{ cm}$$

$$\overline{CD}^2 = \overline{AC}^2 - \overline{AD}^2 = 25^2 - 15^2 = 400$$

$$\overline{CD} = 20 \text{ cm}$$

$$\underline{\underline{a = 20 \text{ cm}, b = 15 \text{ cm}}}$$

④

$\angle M_2QP = 90^\circ$, da (PQ) Tangente an Kreis ist

$\overline{PM}_2 = 2 \cdot \overline{QM}_2 = 2R$, also ist $\triangle PQM_2$

ein halbes gleichseitiges Dreieck.

$$U = 3R + 2R \cdot \frac{\sqrt{3}}{2} = R \left(3 + \frac{\sqrt{3}}{2}\right) = 38.660,254 \dots$$

$$= R(3 + \sqrt{3}) = 47.321 \approx \underline{\underline{38.66 \text{ cm}}}$$

$$A = \frac{(2R)^2 \cdot \sqrt{3}}{4} = \frac{400 \cdot \sqrt{3}}{4} = 100 \cdot \sqrt{3} \approx \underline{\underline{173.205 \text{ cm}^2}}$$

$\frac{1}{2} A!$

$$A = 50\sqrt{3} = 86.603 \text{ cm}^2$$

$$(5) \quad \overline{AB} = 10 = c$$

$$b = \sqrt{\overline{AB}^2 - a^2} = \sqrt{10^2 - 4^2} = \sqrt{84} = 2\sqrt{21}$$

$$\text{Fläche} = \frac{1}{2} ab = 4 \cdot \sqrt{21}$$

$$\frac{1}{2} c \cdot h_c = A \Rightarrow \frac{2A}{c} = h_c = \frac{8\sqrt{21}}{10}$$

$$\underline{\underline{c = 10 \quad b = 9.165 \quad h_c = 3.666}}$$

$$(6) \quad \triangle MBP: \quad R^2 = (R-1)^2 + 3^2$$

$$R^2 = R^2 - 2R + 1 + 9$$

$$0 = -2R + 10$$

$$\underline{\underline{R = 5 \text{ cm}}}$$