

ch2

제 3.5

$$(1) \angle A = \frac{2\pi}{5} \quad \angle B = \angle C = \frac{\pi}{3}$$

$$\Delta ABC = \frac{2\pi}{5}r^2 + \frac{\pi}{3}r^2 + \frac{\pi}{3}r^2 - \pi r^2 = \frac{\pi}{15}r^2.$$

$$b = c = \frac{\frac{\pi}{15}r^2}{\frac{2\pi}{5}} = \frac{r^2}{6}$$

$$(2) \cos \frac{a}{r} = \frac{\cos A + \cos B \cos C}{\sin B \sin C}$$

$$= \frac{\cos \frac{2\pi}{5} + \cos^2 \frac{\pi}{3}}{\sin^2 \frac{\pi}{3}}$$

$$= \frac{\sqrt{5}}{3} \approx 0.745356 \quad \text{by using Mathematica.}$$

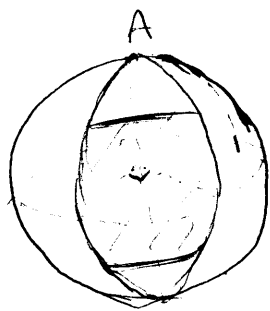
$$(3) \begin{aligned} \frac{a}{r} &= r^2 + r^2 - 2r^2 \cos \frac{a}{r} \\ &= r^2 (2 - 2 \cos \frac{a}{r}) \end{aligned}$$

$$r = \sqrt{\frac{2\frac{a}{r}}{2 - 2 \cdot \frac{\sqrt{5}}{3}}}$$

$$\approx 7.00628 \quad \text{by using Mathematica.}$$

기출문제 | 2006/2/14.

#1.



$$\text{since } \angle A = \frac{\pi}{3}, \quad b=c.$$

$$\cos a = \cos b \cos c$$

$$\cos \frac{\pi}{3} = \cos^2 b$$

$$\cos b = +\sqrt{\frac{1}{2}}$$

$$\therefore b = \frac{\pi}{4}, \frac{3}{4}\pi$$

$$\therefore \frac{\pi}{4} \leq b \leq \frac{3}{4}\pi$$

$$*\Delta ABC = A^* + B^* + C^* - \pi, \quad A^* + a = B^* + b = C^* + c = \pi \quad \text{이동}$$

$$*\Delta ABC = (\pi - a) + (\pi - b) + (\pi - c) - \pi$$

$$= 2\pi - (a + b + c)$$

$$\text{i)} \quad \frac{\pi}{3} \leq a \leq \frac{\pi}{2}, \quad \frac{\pi}{4} \leq b \leq \frac{\pi}{2}, \quad b=c.$$

$$\frac{5}{6}\pi \leq a+b+c \leq \frac{3}{2}\pi.$$

$$\therefore \frac{\pi}{2} \leq *\Delta ABC \leq \frac{7}{6}\pi.$$

$$\text{ii)} \quad \frac{\pi}{2} \geq a \geq \frac{\pi}{3}, \quad \frac{\pi}{2} \leq b \leq \frac{3}{4}\pi, \quad b=c.$$

$$\frac{3}{2}\pi \leq a+b+c \leq \frac{11}{6}\pi.$$

$$\therefore \frac{\pi}{2} \geq *\Delta ABC \geq \frac{\pi}{6}.$$

$$\therefore \text{Max} (*\Delta ABC) = \frac{7}{6}\pi.$$

$$\text{Min} (*\Delta ABC) = \frac{\pi}{6}.$$