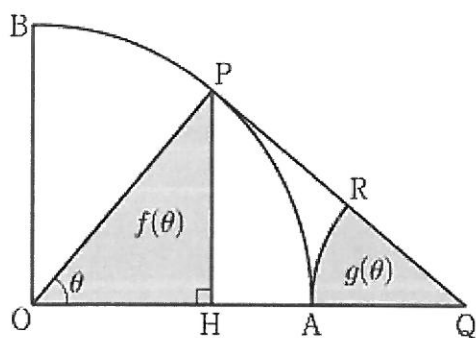


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$$(0 < \theta < \frac{\pi}{2}) \rightarrow \sin \theta \neq 0, \cos \theta \neq 0,$$

$$\overline{OA} = \overline{OB} = \overline{OP} = 1, \quad \text{점 } P(\cos \theta, \sin \theta)$$

$$\therefore f(\theta) \text{ (분자)} = \frac{1}{2} \times \cos \theta \times \sin \theta$$

직선 OP와 직선 PQ는 수직. $\therefore \overrightarrow{PQ} = (\sin \theta, -\cos \theta) \text{ or } (-\sin \theta, \cos \theta)$

$$\therefore \text{직선 PQ: } y = -\frac{\cos \theta}{\sin \theta}(x - \cos \theta) + \sin \theta = -\frac{\cos \theta}{\sin \theta}x + \frac{1}{\sin \theta}, \quad \therefore \text{점 } Q\left(\frac{1}{\cos \theta}, 0\right)$$

$$\angle RQA = \frac{\pi}{2} - \theta, \quad \overline{QA} = \frac{1}{\cos \theta} - 1, \quad \therefore g(\theta) \text{ (분자)} = \frac{1}{2} \times \left(\frac{1 - \cos \theta}{\cos \theta}\right)^2 \times \left(\frac{\pi}{2} - \theta\right)$$

$$\therefore \lim_{\theta \rightarrow 0^+} \frac{\sqrt{g(\theta)}}{\theta \times f(\theta)} = \lim_{\theta \rightarrow 0^+} \frac{\sqrt{\frac{1}{2} \times \left(\frac{\pi}{2} - \theta\right) \times \left(\frac{1 - \cos \theta}{\cos \theta}\right)^2}}{\theta \times \frac{1}{2} \times \cos \theta \times \sin \theta}$$

$$= \lim_{\theta \rightarrow 0^+} \frac{\sqrt{\frac{1}{2}(\frac{\pi}{2} - \theta)}}{\theta \times \frac{1}{2} \times \cos \theta \times \sin \theta} \times \frac{\sin^2 \theta}{\cos \theta \times (1 + \cos \theta)}$$

$$= \lim_{\theta \rightarrow 0^+} \left\{ \frac{\sin^2 \theta}{\theta \times \sin \theta} \times \frac{\sqrt{\frac{1}{2}(\frac{\pi}{2} - \theta)}}{\frac{1}{2} \times \cos^2 \theta \times (1 + \cos \theta)} \right\} = \frac{\frac{\sqrt{\pi}}{2}}{\frac{1}{2} \times 1 \times 2} = \frac{\sqrt{\pi}}{2} //$$