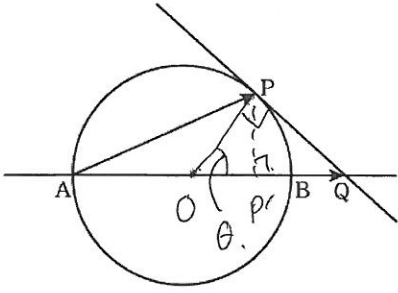


\* 2019년 10월 시행 교육청 고3 수학 가형 27번.



$$\overline{AQ} : \overline{AB} = 5 : 1 \quad \therefore \overline{AB} : \overline{BQ} = 4 : 1 \quad \overline{BQ} = \sqrt{3}$$

$$\therefore \text{지름 } \overline{AB} = 4\sqrt{3}. \quad \text{반지름 } \overline{OA} = \overline{OB} = \overline{OP} = 2\sqrt{3},$$

$$\angle OPA = \frac{\pi}{2}. \quad \angle POB = \theta \text{ 라 할 때,}$$

$$\overline{OP} = 2\sqrt{3}, \quad \overline{OQ} = 3\sqrt{3}, \quad \overline{PQ} = \sqrt{15} \cdot \frac{2}{3} \quad \cos \theta = \frac{2}{3}, \quad \therefore \overline{OP'} = 2\sqrt{3} \times \frac{2}{3} = \frac{4\sqrt{3}}{3}$$

$$\text{따라서 } \overrightarrow{AP} \cdot \overrightarrow{AQ} = \overline{AQ} \times \overline{AP'} = 5\sqrt{3} \times \left( 2\sqrt{3} + 2\sqrt{3} \times \frac{2}{3} \right) = 5\sqrt{3} \times \frac{10\sqrt{3}}{3} = 50 //$$