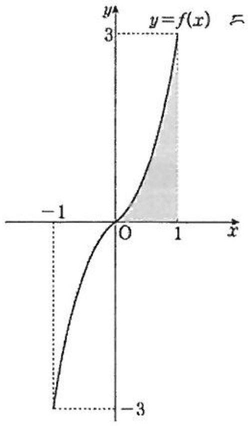
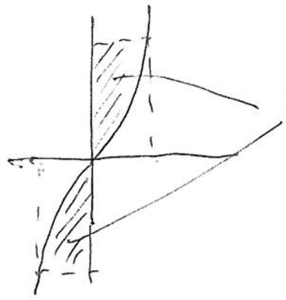
* 2020년 3월 (4월시행) 교육청 모의고사 고3 수학 나형 30번.



$= g(x)$ with respect to $[-1, 1]$

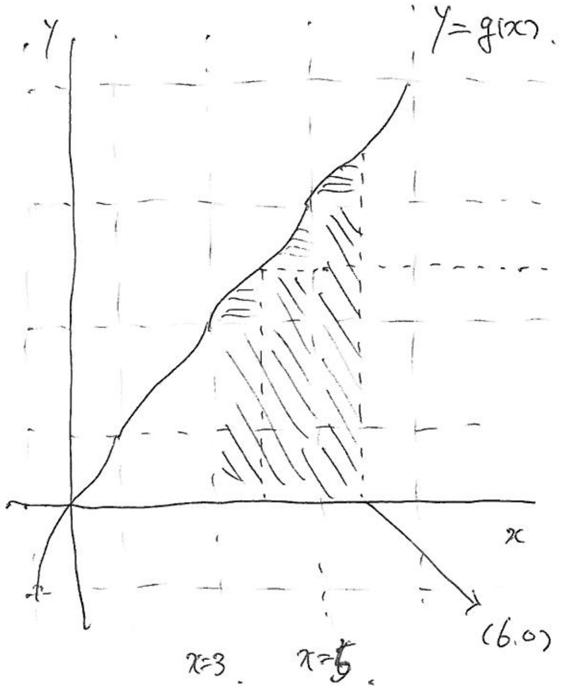
(나) 닫힌구간 $[2n-1, 2n+1]$ 에서 $g(x)$는 $y=f(x)$를 x축의 방향으로 $2n$, y축의 방향으로 $6n$ 만큼 평행이동한 그래프. (n은 자연수)

$f(1)=3$, $\int_0^1 f(x)\,dx = 1$. $\longrightarrow$



넓이는 각각 2.

(나) 조건에 의해.



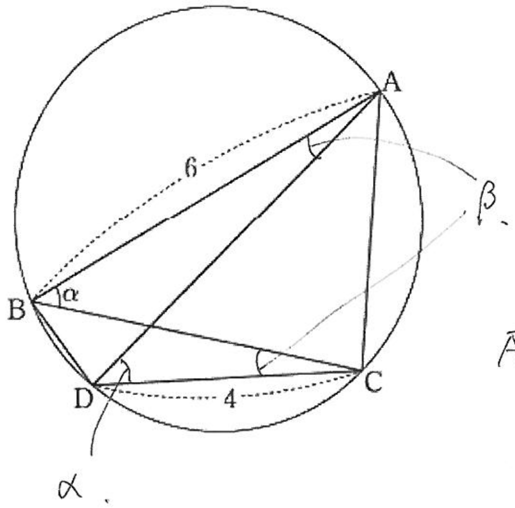
$\Rightarrow \int_3^6 g(x)\,dx = \boxed{\equiv} + \boxed{\%}$

$\boxed{\equiv} = 2+1+2 = 5$

$\boxed{\%} = 1\times 9 + 1\times 12 + 1\times 15 = 36$

$\therefore \int_3^6 g(x)\,dx = 41$

※ 2020년 3월 (4월시행) 교육청 모의고사 고3 수학 나형 29번.



$\angle ABC = \alpha$ 이면 $\angle ADC = \alpha$ (동일 원주각)

$\angle BAD = \angle BCD = \beta$ 라 하면

$\cos\alpha = \frac{3}{4}$ 에서 $\sin\alpha = \frac{\sqrt{7}}{4}$. $\triangle ABD : \triangle CBD = 9 : 5$.

$\overline{AC}^2 = \overline{AB}^2 + \overline{BC}^2 - 2\cdot\overline{AB}\cdot\overline{BC}\cdot\cos\alpha$ ($\triangle ABC$) ... ①

$= \overline{AD}^2 + \overline{DC}^2 - 2\cdot\overline{AD}\cdot\overline{DC}\cdot\cos\alpha$ ($\triangle ADC$) ... ②

→ $\overline{AD}$와 $\overline{BC}$의 관계식 필요.

$\triangle ABD = \frac{1}{2}\times\overline{AB}\times\overline{AD}\times\sin\beta : \triangle CBD = \frac{1}{2}\times\overline{DC}\times\overline{BC}\times\sin\beta = 6\overline{AD} : 4\overline{DC} = 9 : 5$.

$\therefore \overline{AD} = \frac{36}{30}\overline{BC} = \frac{6}{5}\overline{BC}$. ①′ $\overline{AC}^2 = 36 + \overline{BC}^2 - 9\overline{BC}$

②′ $\overline{AC}^2 = \frac{36}{25}\overline{BC}^2 + 16 - \frac{36}{5}\overline{BC}$.

$\therefore \frac{11}{25}\overline{BC}^2 + \frac{9}{5}\overline{BC} - 20 = 0$ 에서 $11\overline{BC}^2 + 45\overline{BC} - 500 = 0$. → $\therefore \overline{BC} = 5$ ($\overline{BC} > 0$, $\therefore \overline{BC} \neq -\frac{100}{11}$)

$S = \triangle ADC = \frac{1}{2}\times\overline{AD}\times\overline{DC}\times\sin\alpha = \frac{1}{2}\times 6\times 4\times\frac{\sqrt{7}}{4}$ ($\because$ $\overline{BC}=5$이면 $\overline{AD}=6$).

$\therefore S^2 = (3\sqrt{7})^2 = 9\times 7 = 63$