제10장 면적 · 체적의 계산 핵심요약

① 면적

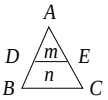
1) 

삼변법 $S=\frac{a+b+c}{2}$ $A=\sqrt{S\ (S-a)(S-\mathrm{b})(S-c)}$

2) **심프슨제1법칙 ③④②공식** $A=\frac{d}{3}\{y_1+y_n+4(y_2+y_4)+2(y_3+y_5+y_7)\}$

3) **심프슨의 제2법칙⑧③③②공식**

$$A=\frac{3d}{8}\{y_1+y_n+3(y_2+y_3+y_5+y_6\ \cdots\cdots)+2(y_4\ \cdots\cdots)\}$$

4) **면적분할** 

$AD=AB\sqrt{\frac{m}{m+n}}$

② 구적기면적계산

1) **구적기축척** $1/L$ =도면의 축척 $1/S$ $\boxed{A=c.n}$ $\boxed{C=\frac{A}{n}}$

2) $1/L \neq 1/S$ $A=(\frac{S}{L})^2\ C.n$

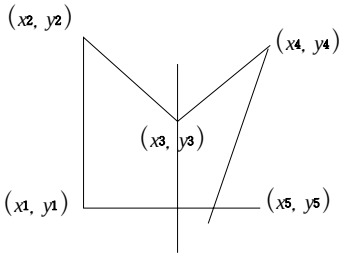
3) $1/L \neq 1/S_1 \neq 1/S_2$ $\boxed{A=(\frac{S_1\times S_2}{L^2})C.n}$

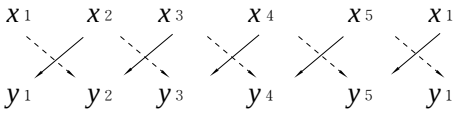
4) 처음축척 $\frac{1}{m_1}$ 처음단위면적 a_1, 나중축척 $\frac{1}{m_2}$, 나중단위면적 a_2 관계

$$\boxed{a_2=(\frac{m_2}{m_1})^2\ a_1}$$

5. **측간의 길이** $\boxed{\ell=\frac{1{,}000\,a}{m^2 d\,\pi}}$

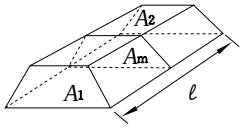
③ 좌표에 의한 면적





+(／ ⊗⊕) − (＼ ⊗⊕) = 배면적 $\boxed{\text{면적} = \frac{\text{배면적}}{2}}$

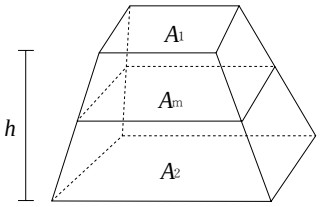
④ 체적계산



1) **중앙단면법** $V = Am \cdot \ell$

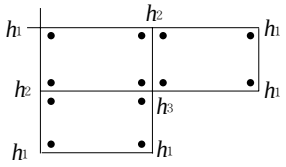
2) **양단평균법** $V = \frac{A_1 + A_2}{2} \cdot \ell$

3) **각주(주상체)** $V = \frac{h}{6}(A_1 + 4A_m + A_2)$



⑤ 점괴법

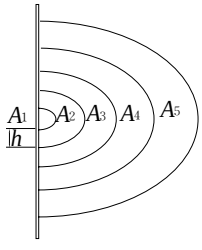
1) **사각형분할** $V = \frac{A}{4}\{\Sigma h_1 + 2\Sigma h_2 + 3\Sigma h_3 + 4\Sigma h_4\}$



2) **삼각형분할** $V = \frac{A}{3}\{\Sigma h_1 + 2\Sigma h_2 + 3\Sigma h_3 \cdots\cdots n\Sigma h_n\}$

3) **계획고** $H = \frac{V}{nA}$

⑥ 등고선체적



심프슨의 제1공식적용 ③ ④ ② 공식

$V = \frac{h}{3}\{A_1 + A_5 + 4(A_2 + A_4) + 2(A_3)\}$