4.1 Introduction

$$\int_{CV} \text{div}(\Gamma \text{ grad } \phi)\text{d}V + \int_{CV} S_\phi \text{d}V$$

$$= \int_{A} \mathbf{n} \,.\, (\Gamma \text{ grad } \phi)\text{d}A + \int_{CV} S_\phi \text{d}V = 0 \qquad (4.2)$$

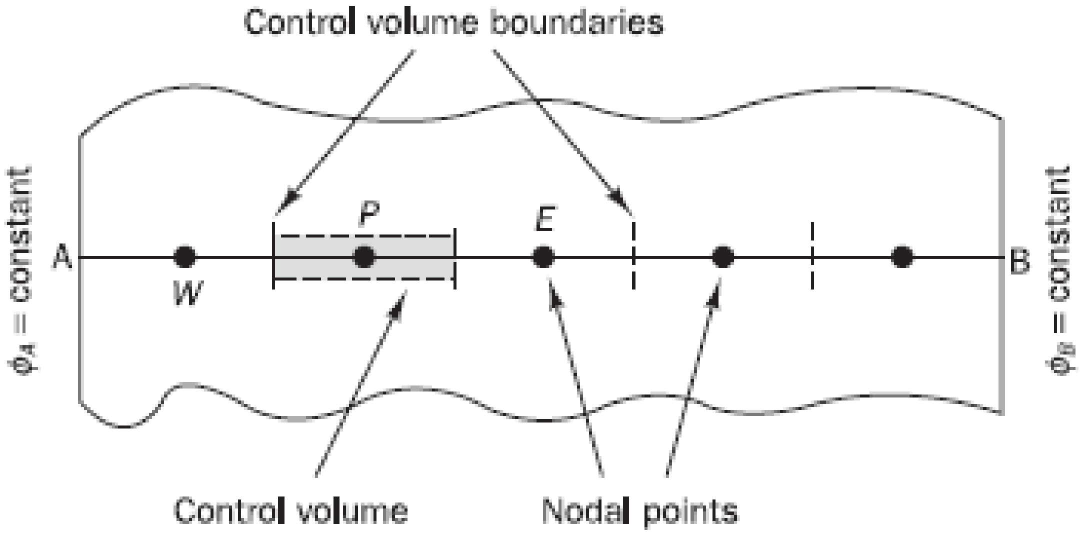
The Divergence Theorem

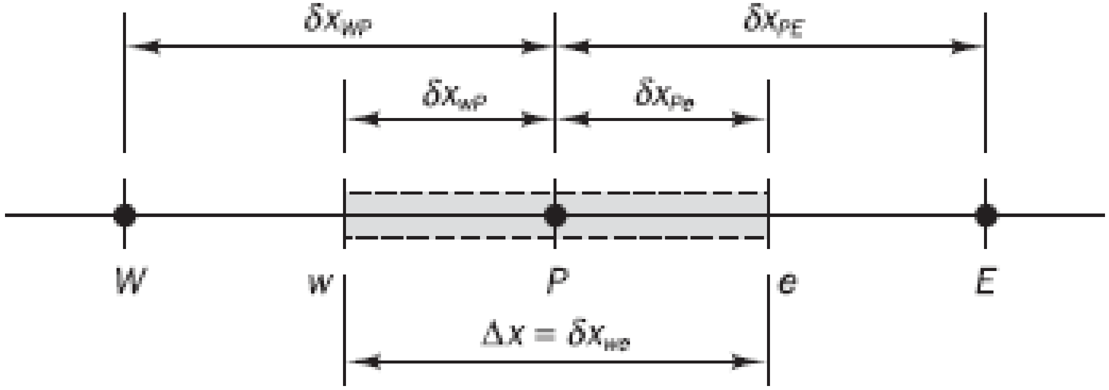
Let *E* be a simple solid region and let *S* be the boundary surface of *E*, given with positive orientation. Let ***F*** be a vector field whose components have continuous first partial derivatives on an open region containing *E*. Then

$$\iiint_E div\mathbf{F}dV = \iint_S F \cdot dS$$

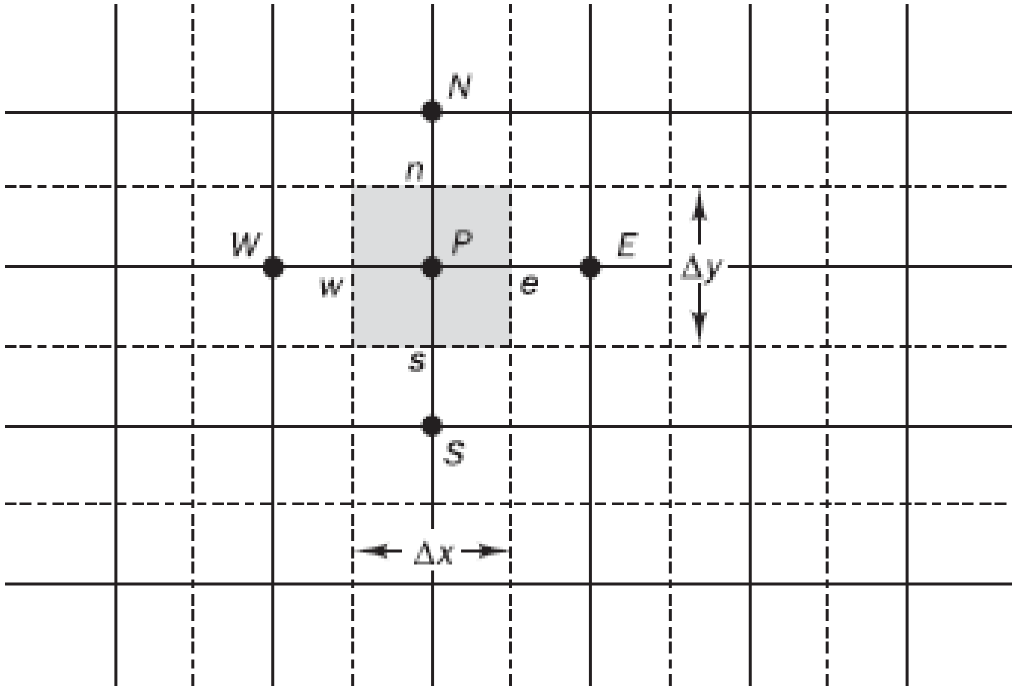
SNUTT Seoul National University Towing Tank

4.2 **Finite volume method for one-dimensional steady state diffusion**




δx_WP
δx_PE
δx_wP
δx_Pe
W
w
P
e
E
Δx = δx_we

4.4 Finite volume method for two-dimensional diffusion problems



4.5 Finite volume method for three-dimensional diffusion problems