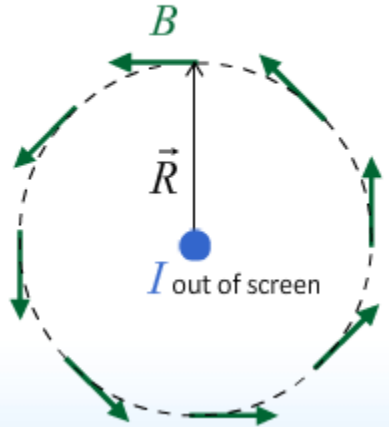## Ampere's Law

$$\oint \vec{B} \cdot d\vec{l} = \mu_o I$$

Infinite current-carrying wire

LHS: $\oint \vec{B} \bullet d\vec{\ell} = \oint B d\ell = B \oint d\ell = B \cdot 2\pi R$

RHS: $I_{enclosed} = I$

$$\longrightarrow \quad B = \frac{\mu_o I}{2\pi R}$$
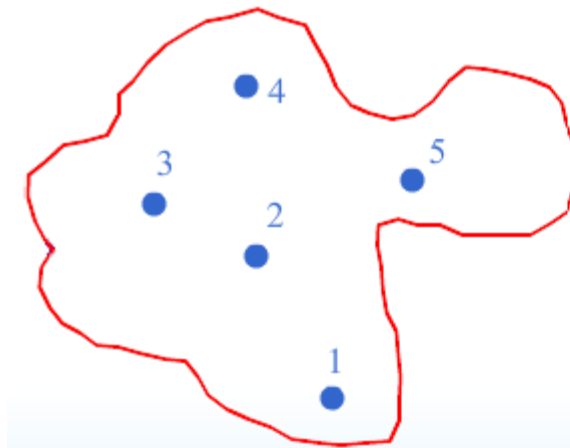
General Case

Ampere's Law

$$\oint \vec{B} \cdot d\vec{l} = \mu_o I_{enclosed}$$