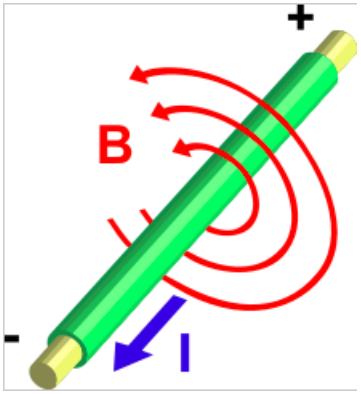
Ampere's Law

Ampere discovered that there is a magnetic field surrounding a wire in which a current is moving



$$\oint \mathbf{B} \cdot d\mathbf{l} = \mu_0 \iint_S \mathbf{J} \cdot dS$$

Stokes theorem equates this with another expression:

$$\nabla \times \mathbf{B} = \mu_0 \mathbf{J}$$

explain why worked examples