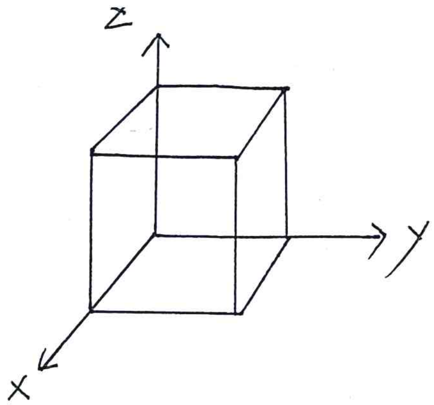
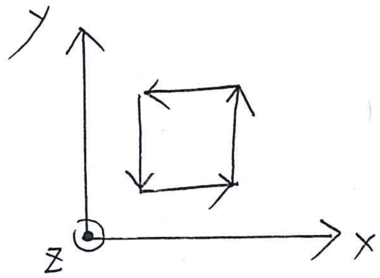


$$\vec{\nabla}\cdot\vec{E} \equiv \lim_{\square \to 0} \frac{\oint_{\partial \square} \vec{E}\cdot d\vec{a}}{\square}$$

$$= \lim_{\substack{\Delta x \to 0 \\ \Delta y \to 0 \\ \Delta z \to 0}} \frac{E_x(\text{前})\Delta y\Delta z - E_x(\text{後})\Delta y\Delta z + E_y(\text{右})\Delta x\Delta z - E_y(\text{左})\Delta x\Delta z + E_z(\text{上})\Delta x\Delta y - E_z(\text{下})\Delta x\Delta y}{\Delta x\Delta y\Delta z}$$

$$= \lim_{\Delta x \to 0} \frac{E_x(\text{前}) - E_x(\text{後})}{\Delta x} + \lim_{\Delta y \to 0} \frac{E_y(\text{右}) - E_y(\text{左})}{\Delta y} + \lim_{\Delta z \to 0} \frac{E_z(\text{上}) - E_z(\text{下})}{\Delta z} = \frac{\partial E_x}{\partial x} + \frac{\partial E_y}{\partial y} + \frac{\partial E_z}{\partial z}$$

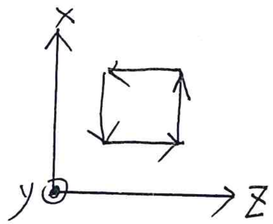
$$(\vec{\nabla} \times \vec{E})_z = \lim_{\square \to 0} \frac{\oint_{\partial\square} \vec{E} \cdot d\vec{l}}{\square}$$



$$= \lim_{\substack{\Delta x \to 0 \\ \Delta y \to 0}} \frac{E_x(\text{下})\Delta x + E_y(\text{右})\Delta y - E_x(\text{上})\Delta x - E_y(\text{左})\Delta y}{\Delta x \Delta y}$$

$$= \lim_{\Delta x \to 0} \frac{E_y(\text{右}) - E_y(\text{左})}{\Delta x} - \lim_{\Delta y \to 0} \frac{E_x(\text{上}) - E_x(\text{下})}{\Delta y} = \frac{\partial E_y}{\partial x} - \frac{\partial E_x}{\partial y}$$

$$(\vec{\nabla} \times \vec{E})_y = \lim_{\substack{\Delta x \to 0 \\ \Delta z \to 0}} \frac{E_z(\text{下})\Delta z + E_x(\text{右})\Delta x - E_z(\text{上})\Delta z - E_x(\text{左})\Delta x}{\Delta x \Delta z} = \frac{\partial E_x}{\partial z} - \frac{\partial E_z}{\partial x}$$



$$(\vec{\nabla} \times \vec{E})_x = \lim_{\substack{\Delta y \to 0 \\ \Delta z \to 0}} \frac{E_y(\text{下})\Delta y + E_z(\text{右})\Delta z - E_y(\text{上})\Delta y - E_z(\text{左})\Delta z}{\Delta y \, \Delta z} = \frac{\partial E_z}{\partial y} - \frac{\partial E_y}{\partial z}$$