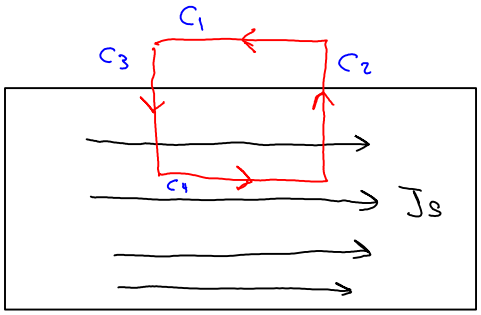
Example 4.11

November-08-12
5:21 PM

Infinite sheet of current



$$\oint B \cdot dl = u_0 \int \vec{J} \cdot \vec{ds}$$

- For contour 3 & 2 $B \cdot dl = 0$ because $\cos(90) = 0$

$$\int_{C_1} \bar{B}_1 \cdot \bar{dl} + \int_{C_2} -\bar{B}_2 \cdot \bar{dl} = u \int \vec{J} \cdot dl$$

↑ negative because of direction

$$B_1 l - B_2 l = u_0 \bar{J}_s l$$

$$B_2 l = -B_1 l$$

$$B_1 l - -B_i l = u_0 \bar{J}_s l$$

$$2B_1 l = u_0 \bar{J}_s l$$

$$B_1 = B$$

$$2Bl = u_0 \bar{J}_s l$$

$$B = \frac{u_0 \bar{J}_s}{2}$$