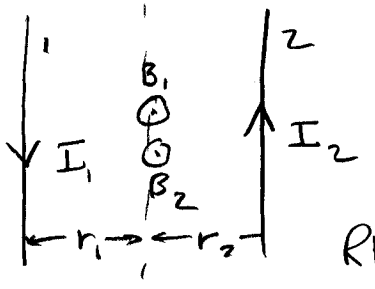
3-0235 — 50 SHEETS — 5 SQUARES
3-0236 — 100 SHEETS — 5 SQUARES
3-0237 — 200 SHEETS — 5 SQUARES
3-0137 — 200 SHEETS — FILLER
COMET

27-2 GIVEN : TWO WIRES WITH CURRENT SHOWN

FIND : $\vec{B}$ MIDWAY BETWEEN THE WIRES



SINCE $I_1 = I_2$

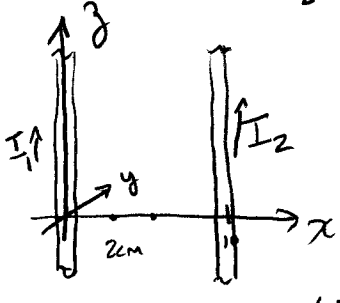
$r_1 = r_2$

RHR → $\vec{B}$ IS OUT OF PAGE (b)

(WITH A MAGNITUDE TWICE THAT CAUSE BY EITHER WIRE)

27-37 GIVEN: INFINITE WIRE, $I_1 = 20A$, +Z DIRECTION (OR Z AXIS)

2ND WIRE PARALLEL TO Z AXIS AT $x = 10$ cm



FIND: I_2 SUCH THAT $B = 0$ AT (2cm, 0, 0)

B AT (5cm, 0, 0)

(a) $\vec{B}_1(2cm) - \vec{B}_2(8cm) = 0$

$$\frac{\mu_0 I_1}{2\pi r_1}\hat{j} - \frac{\mu_0 I_2}{2\pi r_2}\hat{j} = 0$$

$$I_2 = I_1 \frac{r_2}{r_1} = 20A\left(\frac{8cm}{2cm}\right) = \boxed{80A}$$

(b) $\vec{B} = B_1(5cm)\hat{j} - B_2(5cm)\hat{j} = 0$

$$= \frac{\mu_0 I_1}{2\pi r_1} - \frac{\mu_0 I_2}{2\pi r_2} = 2\left(1\times10^{-7}\frac{N}{A^2}\right)\left(\frac{20A}{.05m} - \frac{80A}{.05m}\right)$$

$$= \boxed{-2.4\times10^{-4}\ T\ \hat{j}}$$