Homework Assignment #30
(due Nov. 3, 2020, 11pm, via gradescope)

1. Griffiths 5.35

   Hint: For part (b) use $\mathbf{B} \approx \mathbf{B}_{\text{dip}}$

2. Griffiths 5.36

   Hint: Use Eq. (5.37)

3. Griffiths 5.41 (Hall Effect !)

4. Additional Problem:

   For the rectangular current loop sketeched below :

   The loop has horizontal length L_1 and vertical length L_2, that is in the range $-L_1/2 \leq x \leq +L_1/2$ and $-L_2/2 \leq y \leq +L_2/2$.

   (a) Determine $\vec{m}$.

   (b) Put this current loop into the **B**-field

   $$\mathbf{B} = 3\,\hat{\mathbf{x}} + 4\,\hat{\mathbf{y}} + 13x\,\hat{\mathbf{z}}$$

   (bi) Determine **N** using your result from part (a).

   (bii) Determine $\mathbf{F}_{\text{dip}}$ on the loop.