Homework assigned May 12, due May 14th

(1) Section 6.3, Problem 10. Note on text notation:
\[ \int \int_M [F_1 dy \wedge dz + F_2 dz \wedge dx + F_3 dx \wedge dy] = \int \int_M [F_1 n_1 + F_2 n_2 + F_3 n_3] \, d\sigma \]
\[ = \int \int_M F \cdot n \, d\sigma, \text{ for } F = (F_1, F_2, F_3) \]

(2) Section 6.3, Problem 13.

(3) Section 6.3, Problem 19.

(4) Calculate the outwards flux of the vector field
\[ F = \frac{x}{\|x\|^3} + \frac{x - (1,0,0)}{\|x - (1,0,0)\|^3} \]
through the surface of a sphere of radius 2 centered at the origin. (Hint: You may note from definition of fluxes that the total flux due to a field \( F = G + H \) is the sum of flux due to \( G \) and flux due to \( H \). Also, you may use any result I derived in class.)