Homework Assignments

Assignment 1, Chap. 1, Exercises 7, 9, 14, 16, 23.
Due: 9/6/05 (Tuesday)

Assignment 2, Chap. 2, Exercises 8, 11, 20, 27, 32, 37.
Chap. 3, Exercises 2, 4, 7, 12.
Due: 9/13/05 (Tuesday)

Assignment 3, Chap. 3 Exercises 14, 15, 19, 21, 25, 28.
Chap. 4, Exercises 2, 6, 9.
Due: 9/20/05 (Tuesday)

Assignment 4, Chap. 4 Exercises 17, 19, 22, 23, 33, 35.
Chap. 5, Exercises 6, 8.
Due: 9/27/05 (Tuesday)

Assignment 5, Chap. 5 Exercises 16, 17, 18, 25, 26, 28.
Due: 10/4/05 (Tuesday)

Assignment 6, Chap. 6 Exercises 5, 7, 17.
Chap. 7 Exercises 5, 13, 21.
Chap. 8 Exercises 1, 3, 10.
Due: 10/11/05 (Tuesday)
For the midterm Chap. 8 Exercises 14, 16.
All examples discussed in class.

Assignment 7, Chap. 10 Exercises 2, 6, 19, 20.
Chap. 11 Exercises 5, 7.
Due: 10/25/05 (Tuesday)

Assignment 7, Chap. 11 Exercises 9 (couple is torque), 14, 18, 20.
Chap. 12 Exercises 5, 8.
Due: 11/1/05 (Tuesday)

Assignment 8, Chap. 12 Exercises 9, 13 (part c, extended), 18 (calculate the value of the series for x = 1.9999, manual first 10 terms and computer first 100 terms).
Chap. 13 Exercises 7, 9 (2nd part, 2%bonus), 13.22 (c).
Due: 11/8/05 (Tuesday) (Grade all so do all).

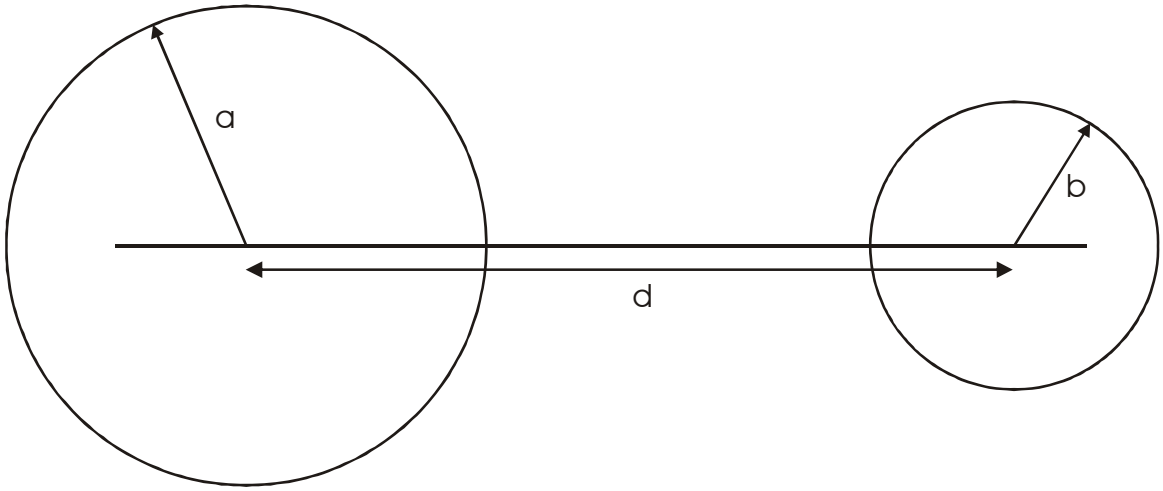
Assignment 9, Chap. 16 Exercises 9, 21, 22, 23.
Due: 11/15/05 (Tuesday)

Assignment 10, Chap. 20 Exercises 18, 21, 25, 27, 29.
Due: 11/29/05 (Tuesday)

Assignment 11, due 12/6/05 (Tuesday)

A capacitor is made of two long conducting cylinders of radius a and b and separated by a distance d (d > a + b). Find the capacitance per unit length in terms of a, b d, and the constant ε_0.

(In MKS unit, the Coulumb law is $F_{12} = \frac{1}{4\pi\varepsilon_0}\frac{q_1 q_2}{r^2}$)



I need you to show details of your calculation. Final answer:

$$C = \frac{2\pi\varepsilon_0}{\cosh^{-1}\left(\frac{d^2 - a^2 - b^2}{2ab}\right)} = \frac{2\pi\varepsilon_0}{\ln\left(\frac{d^2 - a^2 - b^2 + \sqrt{(d^2 - a^2 - b^2)^2 - 4a^2b^2}}{2ab}\right)}$$