Phys 3610, Fall 2009
Problem Set #4

1. *Taylor,* **6.9**

2. *Taylor,* **6.11**

4. *Taylor,* **6.21**

5. *Taylor,* **6.27**

6. *Taylor,* **7.17**

7. *Taylor,* **7.22**

8. *Taylor,* **7.29**

9. *Taylor,* **7.34**

10. Using the Lagrange equations, find the equations of motion for the double pendulum, shown at the right, where the two degrees of freedom are the two angles ϕ_1 and ϕ_2. (The lengths of the pendulae are L_1 and L_2.) The two masses (m_1 and m_2) move in a plane. Don't assume that the angles are small.

What you should produce are two equations (coupled) which which are differential equations for $\phi_1(t)$ and $\phi_2(t)$.

Taylor does do this one in the chapter on coupled oscillators but you should derive it for yourself, especially setting up T_2, which Taylor gets by some clever insight. Do it the usual way but get the same result!