

**Phys 410**

**Spring 2013**

**Homework #6**

**Due Friday, 15 March, 2013**

All problems are from Taylor, *Classical Mechanics*.

- 1) Problem 6.10 First integral of the Euler-Lagrange equation
- 2) Problem 6.21 Brachistochrone redux
- 3) Problem 7.1 Projectile motion
- 4) Problem 7.3 Simple harmonic motion in 2D
- 5) Problem 7.6 Two particles interacting in 3D
- 6) Problem 7.12 Lagrangian with friction
- 7) Problem 7.14 Yo-Yo model
- 8) Problem 7.17 Atwood machine with rotational inertia
- 9) Problem 7.20 Bead on a helix
- 10) Problem 7.29 Pendulum with a rotating point of suspension

Extra Credit

- 1) Problem 6.25 Isochronous oscillations on the cycloid