**ADVANCED DYNAMICS — PHY 4241/5227**

**HOME AND CLASS WORK – SET 7**

(February 21, 2011)

(21a) Derive the results of problem 4 §21 of Landau and Lifshitz. Due February 23 before class (3 points).

(21b) Let $\gamma = \omega + \epsilon$. Taylor expand

$$x(t) = a\,\cos(\omega\,t + \alpha) + \frac{f\,\left[\cos(\gamma\,t + \beta) - \cos(\omega\,t + \beta)\right]}{m\,\left(\omega^2 - \gamma^2\right)}$$

to order $\epsilon$ and take the limit $\epsilon \to 0$. Due in class (3 points).

(22) Derive the results of problem 1 §22 of Landau and Lifshitz. Due February 25 before class (4 points).

(10b) Calculate the normal modes (eigenvalues) of the pendulum of problem 10, set 2. Due February 25 before class (4 points).