M331 Section 1 HOMEWORKS – Spring 2013

Prof. Andrea R. Nahmod

SET 1. Due date: Thursday February 7th

Section 1.1: 1, 2, 3, 4, 9, 11, 13.

Section 1.2: 2, 8 (do by hand), 15.

Section 1.3: 2, 3, 5, 6, 10, 11, 12, 15, 19, 24, 25, 30.

SET 2. Due date: Thursday February 14th

Section 1.5: 3, 4, 6, 7, 9, 10, 12, 31, 40.

Section 1.4: 1, 2, 3, 5, 9, 12

SET 3. Due date: Thursday March 7th

Section 2.1: 3, 4, 6, 8, 9, 11, 14, 15, 16, 18.

Section 2.2: 1, 2,4, 5, 7, 8, 11, 12, 13, 22, 24 (refers to 11), 30 (refers to 13), 31, 34, 35.

Section 2.4: 2, 3, 4, 5, 6, 12, 14.

SET 4. Due date: Thursday March 14th

Section 2.6: 3, 4, 5, 9, 13.

Section 2.7: 1, 2, 3, 5, 11, 12.

SET 5. Due date: Thursday March 28th

Section 2.8 (Forced Vibrations): 3, 4, 7, 9, 10, 16, 17.

Do also Problem 22, section 2.8 (for Midterm practice; not to turn in).

SET 6. Due date: Thursday April 4th- Delayed till Tuesday April 9th

Section 4.1: Read Sections 4.0 and 4.1 and do: 1, 2, 10, 11, 13, 14a)b).

Hint for Pb. 14: Undamped motions are governed by $my'' + ky = 0$; so using similar arguments in the case of two bodies on the two springs one obtains the following linear

homogeneous system

$$\begin{cases} m_1 y_1'' &= -k_1 y_1 + k_2(y_2 - y_1) \\ m_2 y_2'' &= -k_2(y_2 - y_1) \end{cases}$$

for the unknown displacements $y_1 = y_1(t)$ and $y_2 = y_2(t)$ of the two bodies with masses m_1 and m_2 respectively. Solve it.

Section 4.3: 1, 2, 4, 8, 10, 11

SET 7. Due date: Thursday April 11th

Section 4.3 (cont.): 6, 13, 14, 16, 18.

Section 4.4: 1, 2, 3, 4, 5, 6, 7, 9, 11, 12, 15.

SET 8. NEW Due date: Tuesday April 23rd

Section 6.1: 1, 3, 4, 7, 10, 18, 25, 27, 29, 31, 33, 36, 37, 38.

Section 6.2: 1, 2, 3, 4, 5, 8, 9.

SET 9. Due date: Thursday April 25th

Section 6.2(cont.): 12, 13, 14, 16, 17, 18 (**Note** Removed 23, 24, 26. Added 14)

Section 6.3: 2, 3, 4, 5, 6, 12, 14, 15, 17, 18, 19, 21.

SET 10. Due date: Tuesday April 30th

Section 6.4: 3, 4, 5, 6, 12.

- Learn how to use the **Table in Section 6.8.**
- Learn how to use the **Table Section 6.9**.