

Mechanics and Special Relativity, Spring 2006

Homework Assignment # 1

(Due Wednesday, February 1, before the lecture.)

Lectures and Reading Assignments:

Readings are from “*An Introduction to Mechanics*” by Kleppner and Kolenkow.

- Lec 2, 1/25 (Wed): The Algebra of Vectors. **Sec. 1.2, 1.3 (pp. 2–10).**
- Lec 3, 1/27 (Fri): The Algebra of Vectors, cont. Position, Position Vector, and Displacement. Motion in One Dimension. **Sec. 1.4–1.6 (pp. 10–13).**
- Lec 4, 1/30 (Mon): Motion in Three Dimensions. **Sec. 1.6, 1.7 (pp. 13–23).**
- Lec 5, 2/1 (Wed): Circular Motion. **Sec. 1.6, Ex. 1.8 (p.17); Sec. 1.8 (pp.23–27)**

Problems:

Numbered problems are from “*An Introduction to Mechanics*” by Kleppner and Kolenkow, Chapter 1 (pp. 47–49).

1. Given two vectors, $\mathbf{A} = 3\hat{i} - 2\hat{j} + 13\hat{k}$ and $\mathbf{B} = \hat{i} + 6\hat{j} - \hat{k}$, compute: $\mathbf{A} + \mathbf{B}$, $\mathbf{A} - \mathbf{B}$, $\mathbf{A} \cdot \mathbf{B}$, $\mathbf{A} \times \mathbf{B}$.
2. Problem 1.2
3. Problem 1.4
4. Problem 1.7
5. Problem 1.8
6. Problem 1.11