

**Problem Set #5**

**Assigned: September 30**

**Due: October 16**

Part I: Watch the classic “Frames of Reference” video at the link provided and then answer the following questions.

<https://www.youtube.com/watch?v=bJMYoj4hHqU>

1. What demo in this video was most helpful to your understanding of motion in different frames of reference?
2. Using the demo starting at 13:25 for your data, calculate the acceleration of the sled assuming constant acceleration for the duration of the experiment.
3. Why does the pendulum shown at 25:45 leave a trail of sand that is not in a perfectly straight line?

Part II: Complete the following problems in *Classical Mechanics by Fowles & Cassiday*  
5.1, 5.2, 5.3, 5.4 (introductory problems)  
5.7, 5.8, 5.10 (challenge problems)