

**Physics 3221**  
**Fall Term 2018**  
**Homework Problem Set 1**

Due Friday, August 31, 12:50 pm in class.

**Reading:** Chapter 1 from the textbook.

Please make a note on your homework how long it took you to complete the homework.

**Problem 1. Vector algebra.** Problem 1.2★ from the textbook.

**Problem 2. Finding the angle between two vectors.** Problem 1.5★ from the textbook.

**Problem 3. Kinematics of circular motion.** Problem 1.10★ from the textbook.

**Problem 4. The volume of a parallelepiped.** Problem 1.21★★ from the textbook.

**Problem 5. Solving vector equations.** Problem 1.23★★ from the textbook.

**Problem 6. Momentum conservation in an inelastic collision.** Problem 1.30★ from the textbook. In addition, compute the total energy before and after the collision and check if energy is conserved in this process.

**Problem 7. Projectile motion.** Problem 1.40★★★ from the textbook.

**Problem 8. Motion in a rotating reference frame.** Problem 1.46★★ from the textbook.  
See also Problem 1.27★★.

**Problem 9. Motion on a 2-dimensional brane.** Problem 1.49★★ from the textbook.