

MAC 2313, Section 04 with Dr. Hurdal
Spring 2008 – Assignment 1

Due: Tuesday January 15, 2008 at the beginning of class.

Please hand in complete solutions to the following problems. Homework must be stapled to be accepted.

On the last page of your homework, please indicate, with whom (if anyone) that you worked with on this assignment. If you worked completely on your own, then indicate that you worked by yourself.

1. A hiker walks 2 miles southeast on flat ground, then turns east and goes 1 mile along an upward incline of 10° with the horizontal. Then he turns north and goes down an incline of 5° for 3 miles. How far away is the hiker from his starting point and in what direction?
2. Find the the work done by the gravitational force that acts on a 100 kg mass that slides 10 m down a frictionless incline forming an angle of 30° with the horizontal.
3. A plane is heading north at an airspeed of 600km/hr and experiences a wind of 30km/hr blowing from the southwest. Find the plane's direction and ground speed.
4. Find the value of t such that $\mathbf{v} = \langle t, 1, 7 \rangle$ is orthogonal to $\mathbf{w} = \langle 2, -2, 1 \rangle$.
5. Use the cross product to find the area of the parallelogram given by the vertices $(1, 1)$, $(3, 1)$, $(3, 2)$ and $(1, 2)$.