

AOS 100/101
Spring 2017

HOMEWORK #6
(Due Fri. April 21)

Please provide concise, grammatically correct, neatly written answers to the following questions. All questions can be answered in, at most, a few sentences. Don't forget to write your name on the paper!!!

NAME:

- 1) A hockey puck is placed on a *flat*, infinite sheet of ice in the Southern Hemisphere. It is then given a slight push to the west. The sheet of ice is frictionless so that the speed of the puck after the push is constant. What horizontal force acts on the puck after the push? Describe (or draw) the path the puck takes after the push. Explain your description (or drawing).
(10 pts)

- 2) Imagine you are in Madison standing outside on a windy day with the wind at your back. Why is it true that lower pressure is to your left? If the surface wind is balanced, is the shortest distance to lower pressure *directly* to your left? Explain.
(10 pts)

- 3) *Backing* is a term that means “to turn in a counterclockwise direction”. On a certain day in Santiago, Chile, the PGF remains constant in size and direction in the lowest 1 km of the atmosphere (i.e. from the ground to 1 km above the ground). Explain why the wind direction in the lowest 1 km of the atmosphere backs with increasing height on that day. (HINT: Consider the force balances at the surface and at 1 km)
(10 pts)

- 4) What two forces are balanced in geostrophic flow? How does the fact that the winds well above the surface in the middle latitudes are nearly in geostrophic balance serve as proof that the Earth rotates on its axis?
(10 pts)