# PHYS4520 Physics in Meteorology

## Problem Set 8

1. *Inertial-gravity waves* are generalization of the internal gravity waves considered in class to the case $f_0 \neq 0$. Following the notations and procedures used in class, in particular, keep the buoyancy frequency $N$ as a constant,

   (a) derive the dispersion relation for the inertial-gravity waves,

   (b) find expressions for $(\hat{u}, \hat{v})$ in terms of $\hat{p}$,

   (c) what is minimum angular frequency of these inertial-gravity waves?

   (d) for a give frequency $\omega$ and vertical wavelength $m$, do inertial-gravity waves have longer or shorter horizontal wavelength $k$ when compared to internal gravity waves?