Exam 2 Review

1. Continuity Equation
    a. Standard forms
    b. Divergence, Dines Compensation
    c. Geostrophic wind divergence
    d. ω, relationship to w
    e. Stability Change equation
2. Thermal Wind
    a. Equations in x,y,p and x,y,z
        i) characteristics
        ii) calculations of wind change with height
        iii) geostrophic wind versus actual wind
    b. Horizontal temperature advection
        i) backing and veering
        ii) implications on stability change
    c. Baroclinic vs barotropic
        i) definitions
        ii) relationship to thermal wind
        iii) physical implications
    d. Vertical structure of cyclones, anticyclones
        i) cold core low, etc.
        ii) relationship between thermal wind, geostrophic wind
        iii) physical implications
3. Circulation and vorticity
    a. Definition of circulation
    b. Calculations of circulation, vorticity
    c. Bjerknes Circulation Theorem
        i) solenoidal term
        ii) sea breeze calculations
    d. Vorticity equation
        i) basis for equation
        ii) source for each term
        iii) physical interpretation of terms
        iv) applications
    e Geostrophic vorticity
        i) relation to actual vorticity
        ii) calculations based on isobaric height field
    f. Potential vorticity
        i) assumptions required
        ii) IPV form, units
        iii) physical implications
        iv) applications
    g. Rossby Waves
        i) assumptions required
        ii) phase speed
        iii) role of Beta parameter