GEF2200 Atmosfærefysikk 2014

Oppgavesett 1: Oppgaver til 24/1-2014

Oppgaver hentet fra boka Wallace and Hobbs (2006) er merket WH06

A.1.T
What is the difference between R and R^*?

A.2.T
What is apparent molecular weight, and why do we use it?

WH06 3.19

A.4.T
Show that the gas constant for moist air is greater than for dry air.

A.5.T
Why do we introduce virtual temperature?

A.6.T
Should we use virtual temperature when the gas in question is water vapor?

WH06 3.20

A.7.T
The pressure of water vapor in a sample of air at 20°C taken at sea level is 18hPa. What is the mole fraction of water vapor?
Hint: Make use of Dalton's law and equation (3.6).

A.9.T
Derive the hydrostatic equation. Why must the atmospheric pressure decrease with height?

A.10.T

What is the geopotential? Use this quantity together with the hydrostatic equation and the ideal gas law to derive the hypsometric equation.

WH06 3.27

(WH06 3.26)

A.11.T

The first law of thermodynamics states that $dq - dw = du$.
What is dq, dw and du?

WH06 3.18j