

Homework 1

1. The temperature at a point 50 km north of a station is 3 °C cooler than at the station. If the wind is blowing from northeast at 20 m/s and the air is being heated by radiation at the rate of 1 °C per hour, what is the local temperature change at the station?
2. Draw the plot of the difference between geopotential height and height.
3. Show that a homogeneous atmosphere (density independent of height) has a finite height that depends only on the temperature at the lower boundary. Compute this height and temperature profile for surface temperature $T_0 = 273\text{K}$ and surface pressure 1000 hPa.