1) Calculate the dynamic flattening \( H = (C-A)/C \) for the following simple planetary models:

a) A uniform density planet, \( \rho = 5.5 \), with an outer surface defined by \( r = A (1-f \cos^2 \theta) \), with \( \theta \) colatitude

b) A planet with a uniform density core, \( \rho_c = 10 \), covered by a uniform density mantle, \( \rho_m = 4.9 \). The core-mantle boundary is given by

\[ r_c = c (1-f \cos^2 \theta) \]

and the surface is

\[ r_a = a (1-f \cos^2 \theta), \] with \( c = a/2 \).

c) As in b), but now \( r_c = c (1 - f/2 \cos^2 \theta) \). Comment on these results in view of the fact that for Earth, \( f = 3.36 \times 10^{-3} \), while \( H = 3.27 \times 10^{-3} \). 

2) Calculate the change in length of day and amplitude of the Chandler wobble caused by the redistribution of mass due to the melting of a winter’s worth of snow of N. America.

[For evaluating the spherical harmonics involved, approximate the snow load as a point mass at 45°N, 90°W, elevation 500 m. Assume that the meltwater is evenly distributed over the surface of the earth. Estimate needed parameters.]