2.58J
Homework No. 6

1. Solve Eq. (13.41) numerically to obtain temperature distribution between a parallel plates for τ_L=0.1, 0.4, 1.5, and 10. Make sure to compare your results with Fig. 13.3.

2.   (a)   Derive an expression for the heat flux based on the diffusion approximation for radiation heat transfer between two concentric spheres of radius R_1 and R_2, with emissivity ε_1 and ε_2, and temperature T_1 and T_2, respectively.   The medium in between the spheres is gray and isotropically scattering with an extinction coefficient K_e.
        (b)   Derive first-order temperature slip boundary conditions at both surfaces.
        (c)   Obtain an analytical solution for the temperature distribution in the spherical shell.
        (d)   Obtain an analytical solution for the heat flux between the two spheres, compare your results with that of Fig. 14-1.

3.   Problem 15.20.