SKMM 2433 APPLIED THERMODYNAMICS AND HEAT TRANSFER — Semester II 2015-2016
Project — Due : Week 11

1. Consider a gas turbine engine working on a simple Brayton cycle. Under air standard analysis,
    a. Derive the cycle thermal efficiency as a function of pressure ratio, r_p.
        i. Using Matlab or Octave, plot the efficiency over a wide range of r_p and estimate the maximum efficiency.
        ii. Different gases can be represented by their respective *k*. With Matlab or Octave, investigate and comment how changing the *k* would change the efficiency over the same range as above. Choose three common gases and plot on the same graph.
    b. Derive the optimum pressure ratio that will give maximum net work output.
        i. Based on your results above, for air, what is the thermal efficiency for this optimum pressure ratio?
        ii. Plot the net work versus pressure ratio for the three gases above and comment.

Your report should also include the Matlab/Octave program.