60 POINTS **HOMEWORK 10** **DUE: 4/7/16**

Please save your submission as HW10_[your last name].ipynb (for example, HW10_Smith.ipynb) and email it to the instructor or send a link to it on GitHub.

1. (20 points) Solve for the flow around a unit cylinder, and plot the pressure coefficient as a function of the x-coordinate, comparing the theoretical solution to your panel method. Use 10 panels, as shown in Figure 1.

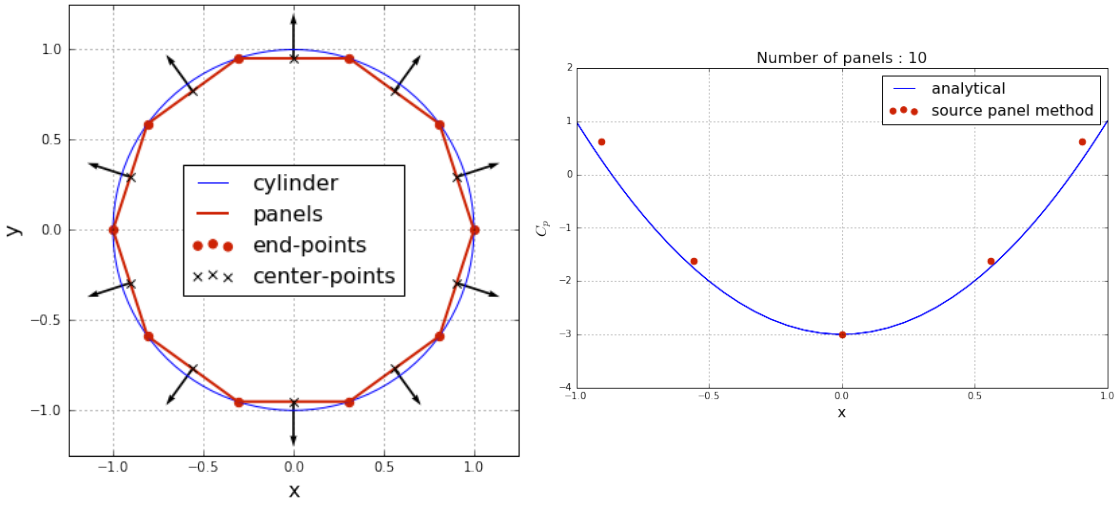

Figure 1

2. (30 points) Solve for the flow around a NACA 0012 airfoil at $\alpha = 0^\circ$, and plot the pressure coefficient as a function of the x-coordinate, comparing the theoretical solution (found using the complex potential and the Joukowski transformation) to your panel method. Use 20 panels, as shown in Figure 2.

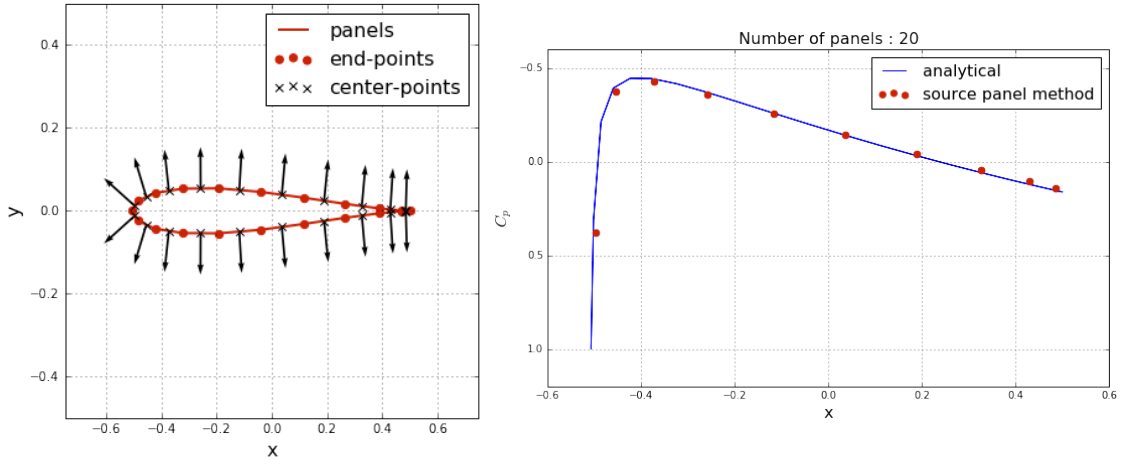

Figure 2

3. (10 points) For the panel method solution found in problem 2, compute the sum of the flux rates due to all the panels. Note that the σ's computed from the linear system measure the flux/length of each panel. What should this sum add up to?