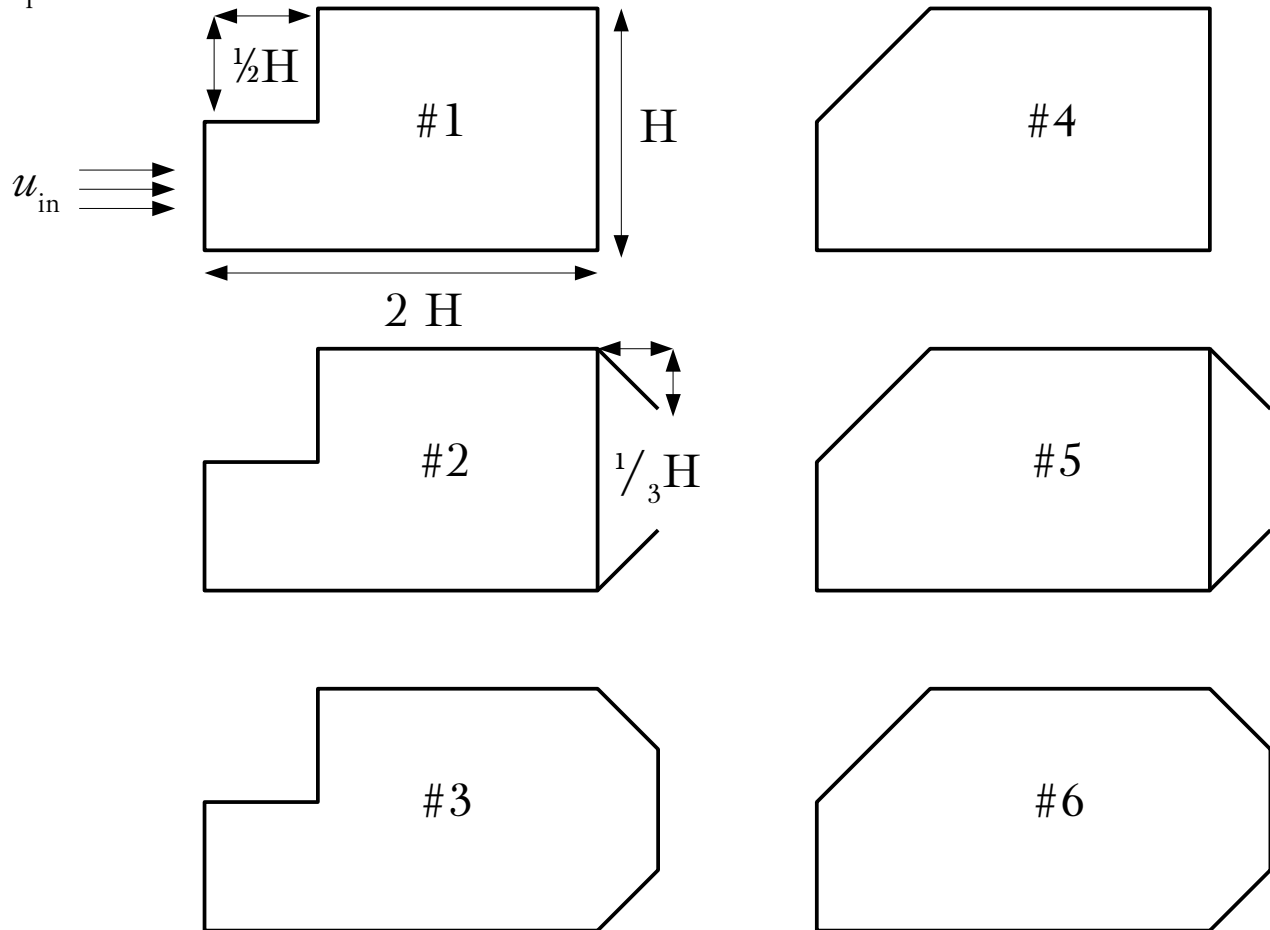


Turbulent Wake

Previously you were assigned one of the following sets of truck contours (#1–3 or #4–6) to create as external flow geometries (*i.e.*, the fluid will flow around the contour in a larger volume). In today's lab, we will calculate the vorticity and turbulent kinetic energy resulting from flow around these three shapes.



1. For each of the three bodies, simulate the flow under the following circumstances: fluid = air (kinematic viscosity $\nu_{\text{air}} = 1.5 \times 10^{-5} \text{ m}^2/\text{s}$); $u_{\text{in}} = 33 \text{ m/s}$ ($\text{Re}_L = u_{\text{in}} \nu_{\text{air}} / L = 6.5 \times 10^7$); turbulence model either $k-\varepsilon$ or $k-\omega$. Inlet turbulence should be 5%. You should plot the vorticity magnitude and turbulent kinetic energy for each case. If you need other assumptions, document them for this assignment. Submit plots to me-498admin@illinois.edu.