# CS552: Computer Graphics
Home Assignment (2D Viewing and Clipping)

1. Find the normalization transformation that maps a window whose left corner is at $(1, 1)$ and upper right corner is at $(3, 5)$ onto a (a) a viewport that is the entire normalized device screen and (b) a viewport that has lower left corner at $(0, 0)$ and upper right corner $(\frac{1}{2}, \frac{1}{2})$.

2. Find the complete viewing transformation that maps a window in world coordinate with x extent 1 to 10 and y extent 1 to 10 onto a viewport with x extent $1/4$ to $3/4$ and y extent 0 to $1/2$ in normalized device space and then maps a workstation window with x extent $1/4$ to $1/2$ and y extent $1/4$ to $1/2$ in the normalized device space into a workstation viewport with x extent 1 to 10 and y extent 1 to 10 on the physical display device.

3. Let R be the rectangular window whose lower left-hand corner is at $L(-3, 1))$ and upper right-hand corner is at $R(2, 6)$. For each line shown in the figure below, apply Cohen-Sutherland line clipping algorithm and show the results of clipping.
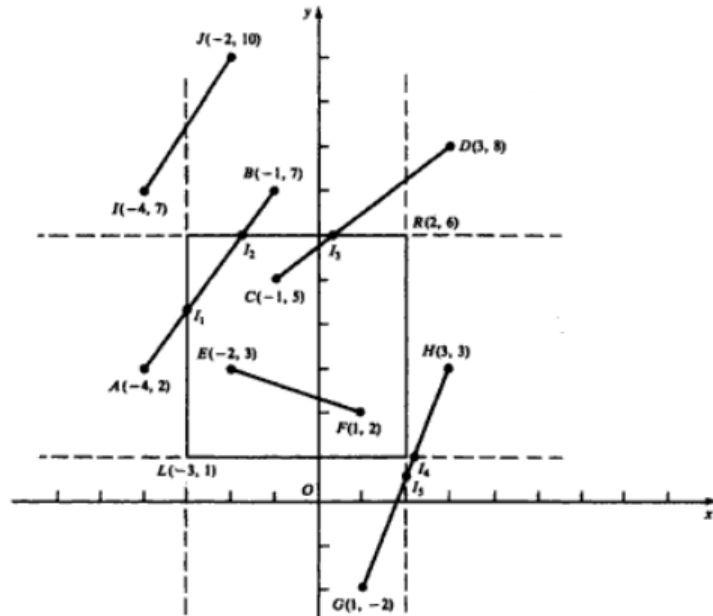
4. Clip the polygon $P_1, \ldots, P_8$ in the figure below against the rectangular clipping window using the Sutherland-Hodgeman algorithm.