

1) Apply the Sutherland-Hodgman Polygon Clipping algorithm to the above polygon (vertices 1-5). Use the indicated clipping window. Show all steps!

L

$\{1, 2\}$ out-in $\{1', 2\}$
 $\{2, 3\}$ in-in $\{3\}$
 $\{3, 4\}$ in-in $\{4\}$
 $\{4, 5\}$ in-in $\{5\}$
 $\{5, 1\}$ in-out $\{5'\}$

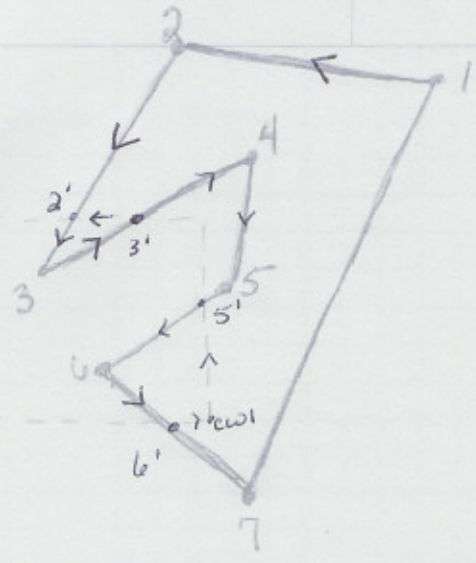
\downarrow
R
 $\{1', 2\}$ in-out $\{1''\}$
 $\{2, 3\}$ out-in $\{2', 3\}$
 $\{3, 4\}$ in-in $\{4\}$
 $\{4, 5\}$ in-in $\{5\}$
 $\{5, 5'\}$ in-in $\{5'\}$
 $\{5', 1'\}$ in-in $\{1''\}$

B

$\{1'', 2'\}$ out-in $\{1''', 2'\}$
 $\{2', 3\}$ in-in $\{3\}$
 $\{3, 4\}$ in-in $\{4\}$
 $\{4, 5\}$ in-in $\{5\}$
 $\{5, 5'\}$ in-in $\{5'\}$
 $\{5', 1''\}$ in-out $\{5''\}$
 $\{1'', 1'''\}$ out-out $\{\}$

\downarrow
T
 $\{1''', 2'\}$ in-in $\{2'\}$
 $\{2', 3\}$ in-in $\{3\}$
 $\{3, 4\}$ in-out $\{3'\}$
 $\{4, 5\}$ out-in $\{4', 5\}$
 $\{5, 5'\}$ in-in $\{5'\}$
 $\{5', 5''\}$ in-in $\{5''\}$
 $\{5'', 1'''\}$ in-in $\{1'''\}$

final polygon
 $2' \rightarrow 3 \rightarrow 3' \rightarrow 4' \rightarrow 5'' \rightarrow 1'''$



2) We have a filled polygon that doesn't fit in the clipping window. Use an appropriate clipping algorithm to clip the polygon. (Use Sutherland-Hodgman OR Weiler-Atherton whichever is most appropriate)

Can't use Sutherland-Hodgman because not left with single set of vertices

$$1 \rightarrow 2 \rightarrow 3 \rightarrow \underbrace{3' \rightarrow 2' \rightarrow 3}$$

$$3 \rightarrow 4 \rightarrow 5 \rightarrow \underbrace{6 \rightarrow 6' \rightarrow CW1 \rightarrow 5' \rightarrow 6}$$

$$6 \rightarrow 7 \rightarrow 1 \text{ Done}$$

2 vertex sets

$$3, 3', 2'$$

&

$$6, 6', CW1, 5'$$