**Week 13 Tutorial Questions**

8.0 What are the conditions for checking whether a line-segment is completely inside or completely outside the clipping window using Cohen-Sutherland clipping algorithm.

**P1 and P2 do not equal 0 -> outside, P1 or P2 = 0 -> inside.**

8.6 Derive the viewport transformation. Express it in terms of the three dimensional scaling and translation matrices used to represent affine transformations in two dimensions.

**. X is the same but with x instead of y**

8.18 Consider the edge of a polygon between vertices at (x1, y1) and (x2, y2). Derive an efficient algorithm for computing the intersection of all scan lines with this edge. Assume that you are working in window coordinates.

**dx = x2 – x1, dy = y2-y2, D = 2dy – dx, y = y0**

**For x from x1 to x2**

**Plot(x,y)**

**If D > 0**

**y = y+1**

**D = D -dx**

**End if**

**D = D + dy**

8.19 Vertical and horizontal edges are potentially problematic for polygon-fill algorithms. How would you handle these cases for the algorithms that we have presented?

**If the line is horizontal the if statement above with never be reached and so the line drawn stays along the x axis but behaves in a reasonable manor.**

**If the line is vertical however, the result would not look right because the algorithm about only takes one value** in each x point. In order to solve this problem, the axis can be swapped.