In this lab we will be investigating a procedure for rendering polygons, known as **polygon scan conversion**. The idea is very simple. Given a polygon $P$ in the plane, it has a bottom $y$-value, $y_{\text{min}}$, and a top $y$-value $y_{\text{max}}$. Starting from the bottom row, we scan along horizontal lines (of constant $y$) and check if our current pixel is in the polygon. If it is, we draw it. Otherwise, we keep moving. Once we have finished the top row, we are done.

We will limit ourselves to drawing triangles in this lab.

**Lab 3.** Implement triangle scan conversion with Open GL as follows. Draw pixels where the mouse clicks on the window. Every time 3 new points have been added, use triangle scan conversion to fill in the triangle which connects those 3 points. Cycle through at least 5 colors so that no 5 consecutive triangles are the same color. Also, make it so that the window is cleared by inputting 0 on the keyboard. Show your work to your TA by drawing several triangles.

You do not need to worry about the case where the triangle reduces to a straight line or point. You can build off of `main.cpp`, `Makefile`, and `point2d.h` from the previous labs.