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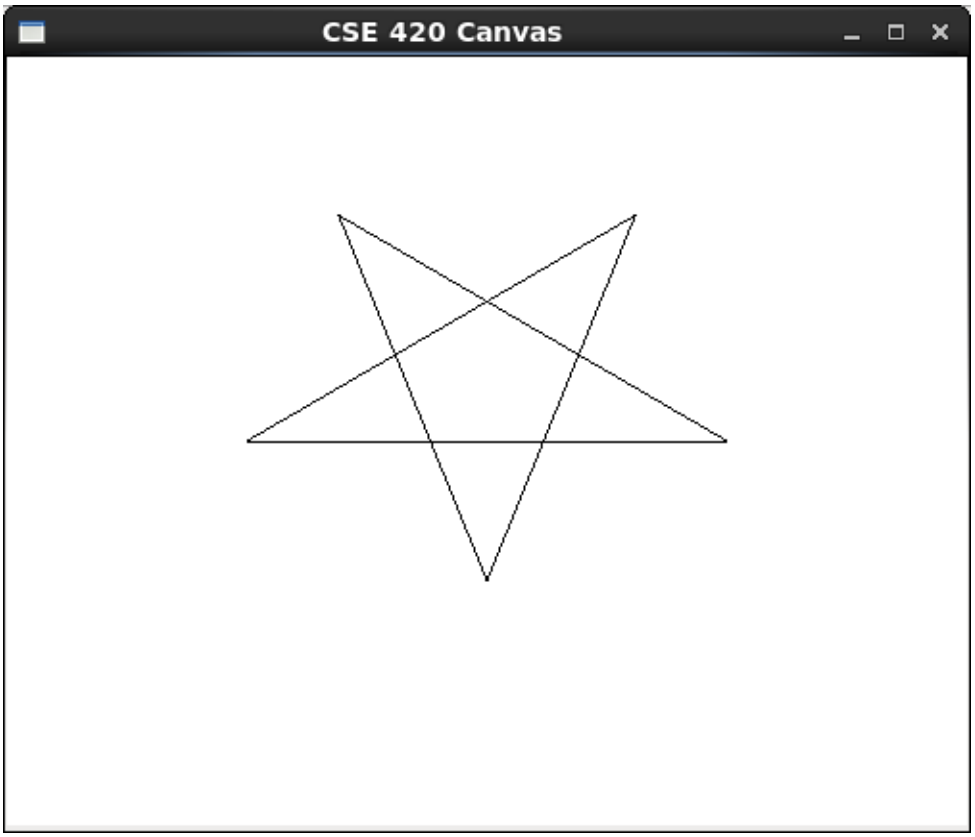
Lab 5

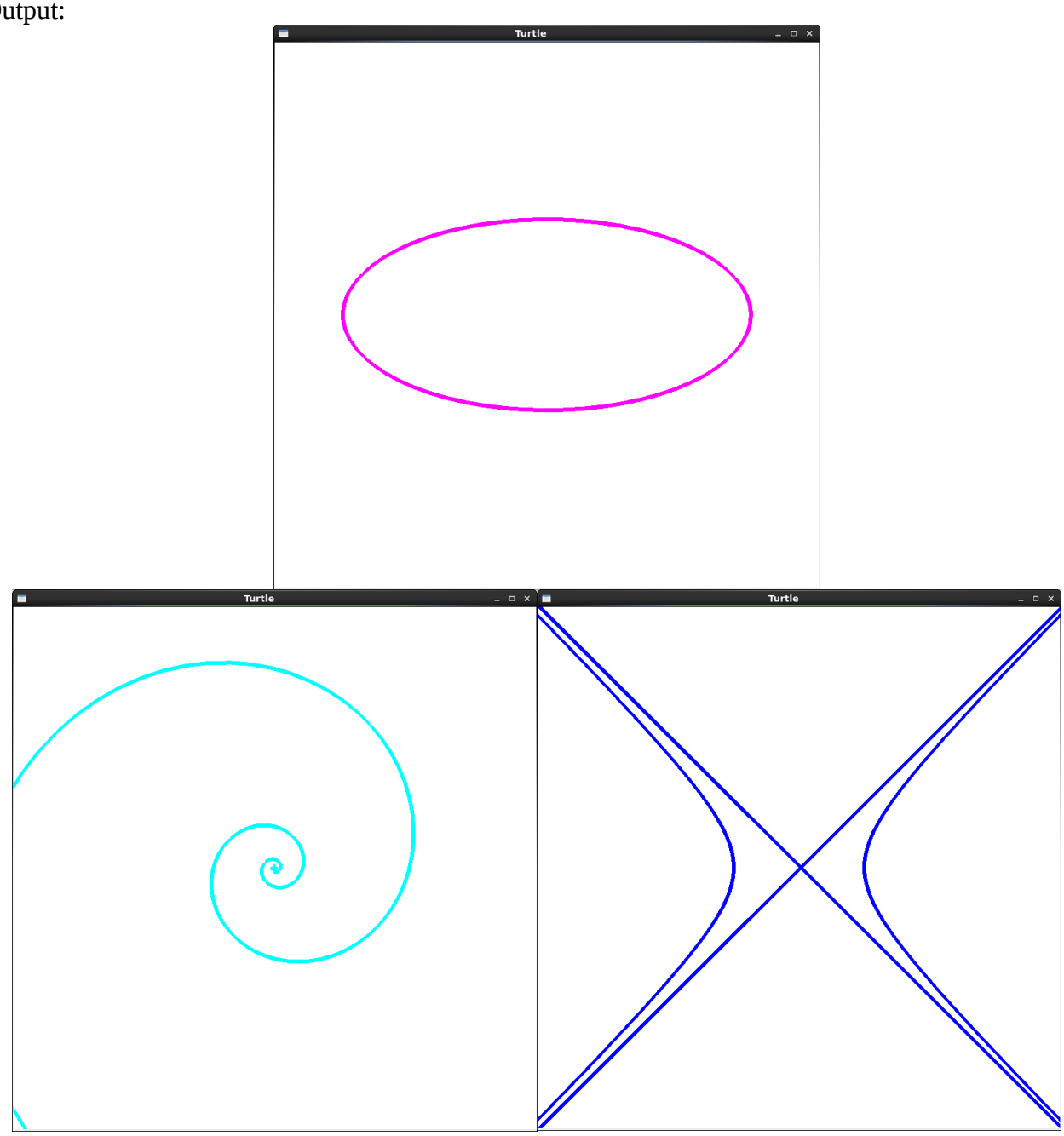
Output:



Code:

```
//demo_canvas.cpp
#include "canvas.h"

Canvas cvs(500, 400, "CSE 420 Canvas"); //global canvas object

void display()
{
  cvs.clearScreen();     //clear screen

  cvs.setColor (0,0,0);
  cvs.moveTo( -5.0, 0 );

  for (int i = 0; i < 5; i++) {
    cvs.forward(10, 1);
    cvs.turn (144);
  }

  glFlush();
}
```

Output:



Code:

```
...
void ellipse()
{
  cvs.setWindow ( -200, 200, -200, 200 );
  cvs.setColor ( 1, 0, 1 );
  double W = 150, H = 70, t, x, y;
  double pi = 3.14159265389;

  t = 0;
  x = W * cos ( t );
```

```
  y = H * sin ( t );
  cvs.moveTo ( x, y );

  for ( t = 0; t <= 2.1 * pi; t += 0.1 ) {
    x = W * cos ( t );
    y = H * sin ( t );
    cvs.lineTo ( x, y );
  }
}

void spiral()
{
  cvs.setWindow ( -100, 100, -100, 100 );
  cvs.setColor ( 0, 1, 1 );
  double K = 0.02, a = 0.25, x, y, f, t;
  const double pi = 3.14159265389;
  t = 0;
  f = K * exp ( a * t );
  x = f * cos ( t );
  y = f * sin ( t );
  cvs.moveTo ( x, y );
  for ( t = 0; t <= 12 * pi; t += 0.1 ) {
    f = K * exp ( a * t );
    x = f * cos ( t );
    y = f * sin ( t );
    cvs.lineTo ( x, y );
  }
}

void hyperbola()
{
  cvs.setWindow ( -200, 200, -200, 200 );
  cvs.setColor ( 0, 0, 1 );
  double x, y, t, a = 50, b = 50;
  const double pi = 3.14159265389;
  t = -5;
  x = a * (1 / cos (t));
  y = b * (sin (t) / cos (t));
  cvs.moveTo (x, y);

  for (t = -5; t < 2 * pi ; t += 0.1) {
    x = a * (1 / cos (t));
    y = b * (sin (t) / cos (t));
    cvs.lineTo (x, y);
  }
}
...
```

Report:

The first exercise I just turtle graphics to draw the star, there was similar code in previous labs. For exercise two, I did it while looking at the formulas in the lecture notes. I think I got all of them right, but I don't really understand the equations. I will try to look more into this part of the lecture.