1. **Fundamentals of digital images**
   - Be able to use different coordinate systems (origin location, axis orientation, etc)
   - Pixel coloring (RGB) within a coordinate system
   - High-level difference between raster graphics and vector graphics (+ pros and cons of each)
   - Review: Classes 1, Lab 1

2. **Lines**
   - Line equations (both explicit and parametric)
   - Slopes, line intersections, line segments, etc
   - Line drawing algorithm between two points
   - Line clipping algorithm
   - Review: Classes 2 and 9-10, Handout 1, Lab 5, HWs 1 and 5

3. **Polygons**
   - Regular polygons and basic trig, convex vs. concave polygons
   - Review: Class 3, Lab 2

4. **Fill**
   - Flood fill algorithm, recursion and recursive functions
   - Sweep fill algorithm (main idea but not implementation details)
   - Review: Classes 4-5, Handout 2, HW 2

5. **Transformations**
   - Rotate, translate, scale, shear, and reflect
   - Be able to draw out what a given transformation does
   - Matrix form for all transformations above
   - Why do we need 3x3 matrices for 2D transformations?
   - Matrix multiplication for transformations and their compositions
   - Commuting properties for different combinations of transformations
   - Review: Classes 5-7, Handout 3, HWs 3-4, Transformation notes

6. **JavaScript and HTML Canvas**
   - Basics of JavaScript (functions, variables, loops, conditionals, etc)
   - 2D points, lines, shapes, and coloring them
   - Transformations and animations
   - Review: Class 2, Lab 3, HWs 1-2 and 4-5

7. **Curves**
   - Concepts and mathematics of Bézier curves
   - Be able to draw out what curves would look like from control points
   - Recursive-style definition of Bézier curves
   - Review: Classes 8-9, Lab 4, HW 5
CSC 240: Computer Graphics
Midterm: Fall 2016

Completed by: Sunday, October 30 at 4pm

- This exam is to be taken in the Young Science Library during any of their open hours.
- The time limit is 2 hours unless you received an email saying otherwise. I will be checking all in/out time stamps.
- No communication about the exam with anyone in the class (or outside the class).
- No electronic devices are to be used during the exam, but you may use a 2-sided cheat sheet. Your cheat sheet should be handwritten and created by you.
- Discussing the exam, going over the time limit, and using electronic devices are all honor code violations.
- The coding question is not to be done during these 2 hours. You have unlimited time (until the deadline) outside of the exam for that part (turn in on Moodle).
- Make sure all your work is contained on these pages (writing on the backs is okay).
- If you are unable to make progress on any part of the exam, tell me what you tried; describe your thought process.

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