

Assignment 2

The first 5 problems should be completed by September 2.

6, 7, and 8 should be done by September 5.

Problems 9 and 10 are due September 9.

1. Compute the size of a 640×480 image at 240 pixels per inch.
2. Compute the resolution of a 2×2 inch image that has 512×512 pixels.
3. If an image has a height of 2 inches and an aspect ratio of 1.5, what is the width?
4. If we want to resize a 1024×768 image to one that is 640 pixels wide with the same aspect ratio, what would be the height of the resized image?
5. If we want to cut a 512×512 sub-image out from the center of an 800×600 image, what are the coordinates of the pixel in the large image that is at the lower left corner of the small image?
6. If we use direct coding of RGB values with 2 bits per primary color, how many possible colors do we have for each pixel?
7. If use direct coding of RGB values with 10 bits per primary color, how many colors do we have for each pixel?
8. Explain how you could prepare a frame buffer so a circle could be rendered using the entries. HINTS: How many points will you need for a realistic picture? Do you need to compute points for the entire circle? Why not? Add the circle to your program.
9. **Special Challenge: Develop an algorithm analogous to the Bresenham's algorithm for the line, but make it work for a circle.
10. ** Special Challenge: Implement the Bresenham's line algorithm and your circle algorithm.