

Homework 6

Due Monday, November 11, 2019

Math 206

1. In class, we saw the following code:

```
from PIL import Image
img = Image.new( 'RGB', (600,600), 'white' )
pixels = img.load()

for x in range(300):
    for y in range(300):
        pixels[x,y] = (255,0,0)

for x in range(300,600):
    for y in range(300):
        pixels[x,y] = (0,255,0)

for x in range(300):
    for y in range(300,600):
        pixels[x,y] = (0,0,255)

img.show()
```

Get this, or something similar, working on your computer.

2. Mess around with putting different colors in the four boxes. Not just primary colors.

3.
 - (a) Make a picture where the red value is 0 on the left, 255 on the right, and proportional to the x -coordinate, and the blue and green values are 0 everywhere.
 - (b) Make a picture where the green value is 0 at the top, 255 at the bottom, and proportional to the y -coordinate, and the red and blue values are 0 everywhere.
 - (c) Do both at once: so the red value is proportional to x , the green value is proportional to y , the blue value is zero everywhere. What color is it in the lower right?
4. Make a picture where the green value is proportional to the distance from $(0, 0)$.
5.
 - (a) Make a picture where it's blue above the parabola $y = x^2/10$, and green below.
 - (b) Make a picture where it's red inside the circle $x^2 + y^2 = 10$ and yellow outside.
 - (c) Make a picture where it's blue if $y \geq x^2/10$ and $x^2 + y^2 \geq 10$, green if $y < x^2/10$ and $x^2 + y^2 \geq 10$, and red or yellow in the other two cases. Or you can choose different colors.
6. In a bitmap, the origin ($x = 0$, $y = 0$) is in the upper left, the positive x -direction is to the right, and the positive y -direction is down. In mathematics, we usually want the origin to be in the middle and the positive y -direction to be up. Edit your code from #4 and #5 to make a picture that conforms to math conventions. Optional: Make the coordinate axes black.