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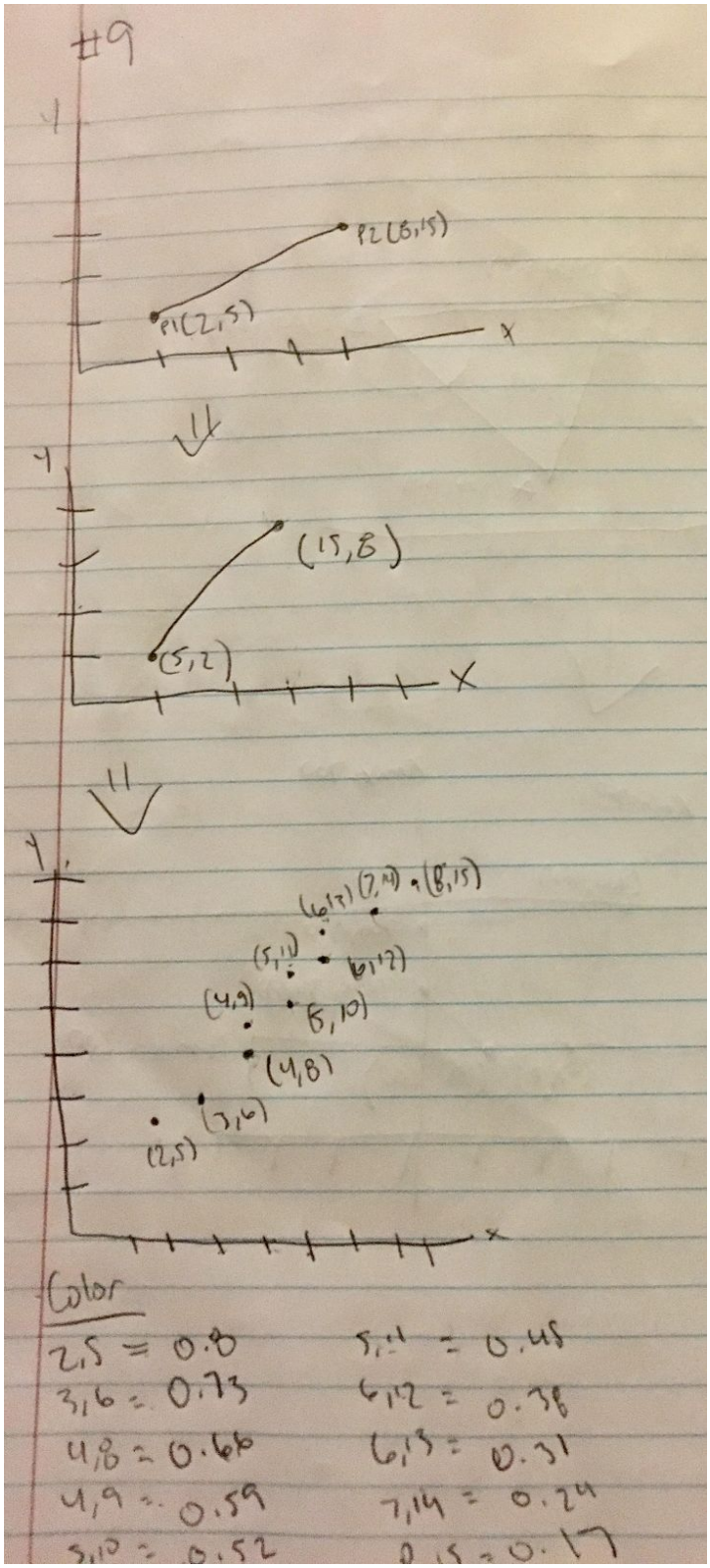
CS 112

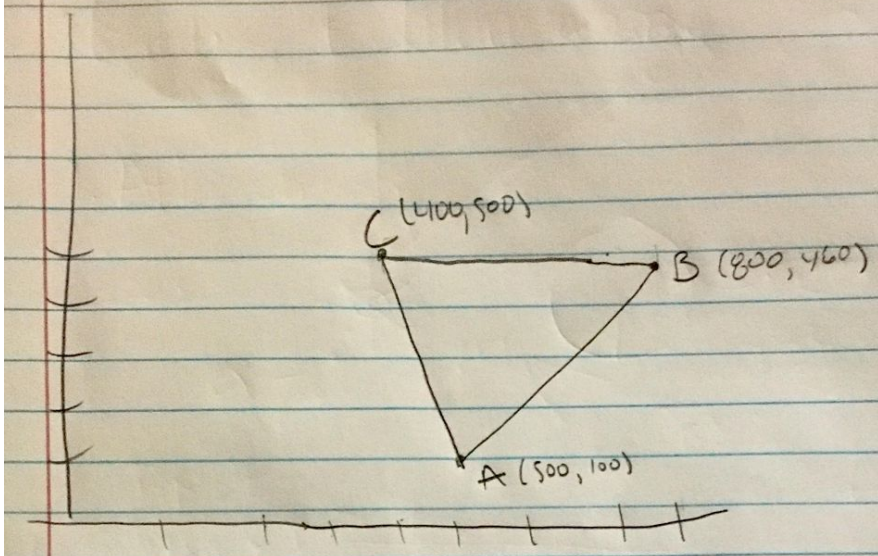
Written Assignment 3

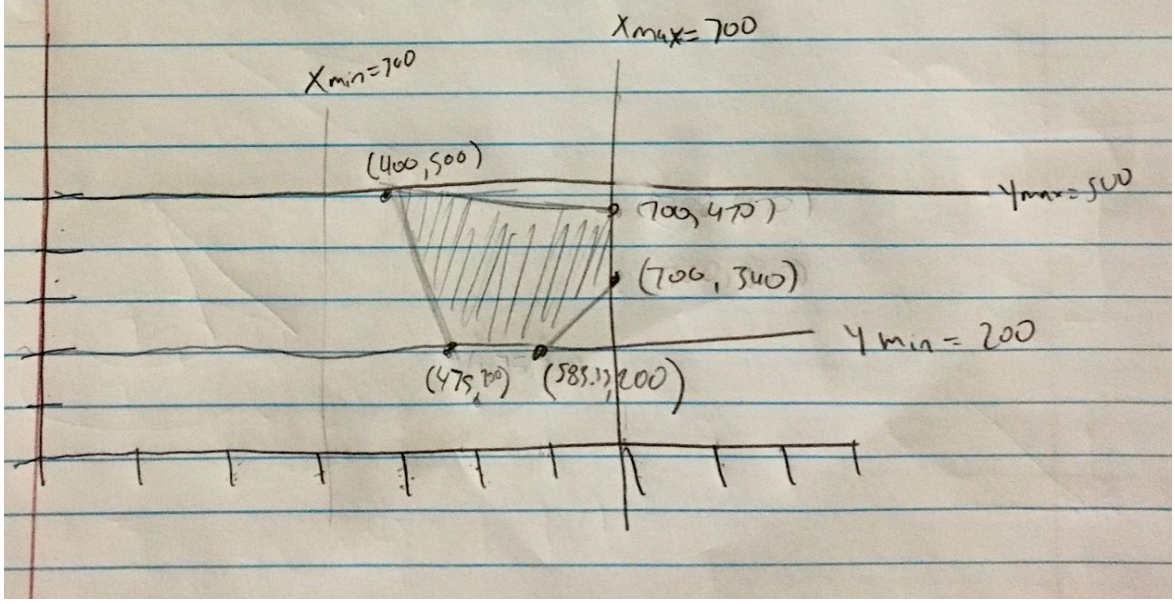
1. $(B-A)\,x\,(C-A)$ (choice B)
2. Between the model-view and the projection transformations (choice A)
3. You can tell whether ABC is facing the viewer or not based on the dot product of the face's normal and the view direction being greater than 0, $N \bullet V > 0$. In order to compute the orientation of the triangle if we use perspective projection we would also need a point in the triangle.
4. Diffuse and Specular (choices B and C)
5.
   (1) If each edge has one adjacent front-facing triangle and the other is back-facing, if so then it is a silhouette.
   (2) You expect to see nothing to appear.
   (3) If the thickness was increased for the second rendering you would expect to see a silhouette.
6. z = distance(x, P)
7. Each pixel will be assigned with two colors, with two different depth values. The lower the depth value determines which color becomes rendered. Meaning that the color of the pixel will depend on the cone it's closest to.
8. The shape of the curve of this boundary will be a straight line.
9.


#9
y
P2(8,15)
P1(2,5)
x
y
(15,8)
(5,2)
x
y
(6,12) (7,14) (8,15)
(5,11)
(6,12)
(4,9)
(8,10)
(4,8)
(3,6)
(2,5)
x
Color
2,5 = 0.8
3,6 = 0.73
4,8 = 0.66
4,9 = 0.59
3,10 = 0.52
5,11 = 0.45
6,12 = 0.38
6,13 = 0.31
7,14 = 0.24
8,15 = 0.17

10.

#10


C (400, 500)
B (800, 460)
A (500, 100)


$x_{min}=700$
$x_{max}=700$
(400, 500)
$y_{max}=500$
(700, 470)
(700, 340)
$y_{min}=200$
(475, 200)
(585.1, 200)