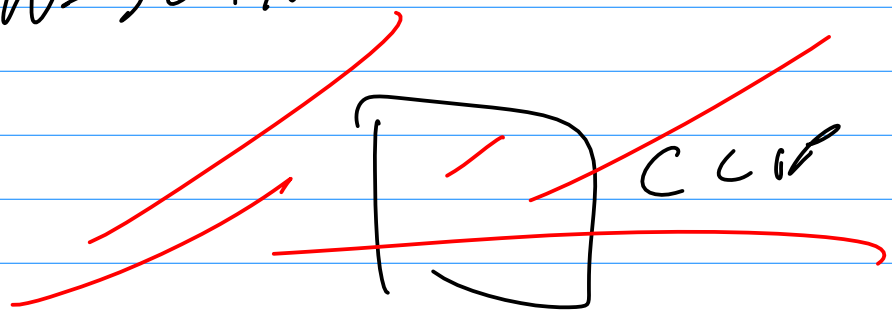
11/17/11

ERIC AREÉS TOUR
ÉMPAC

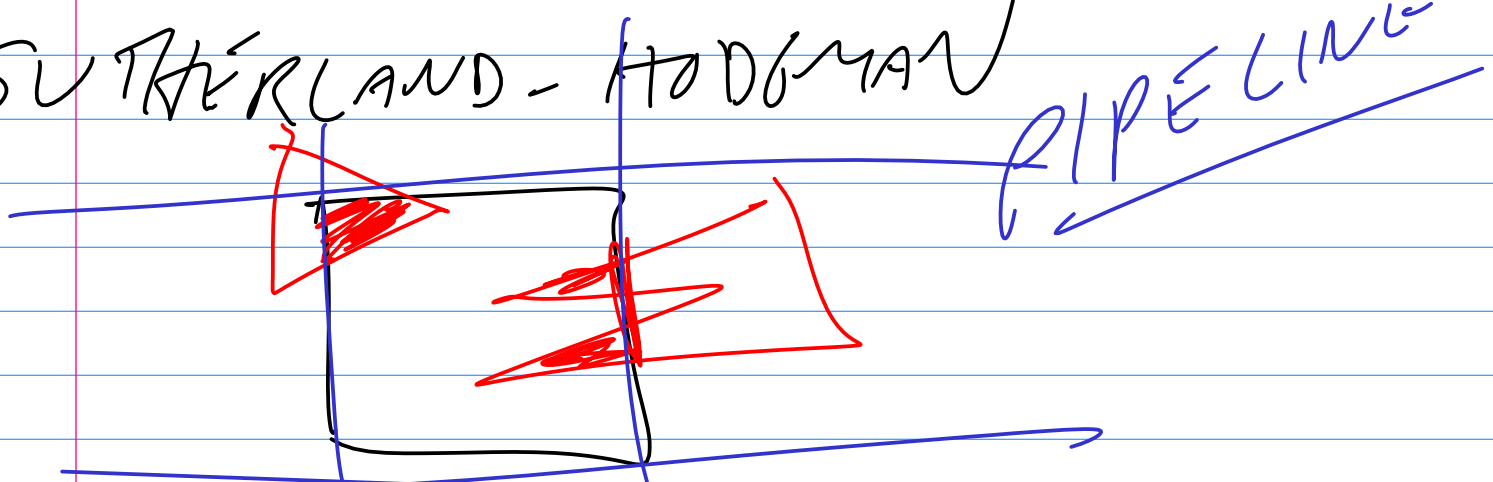
MON AFTER THANKSGIVING.

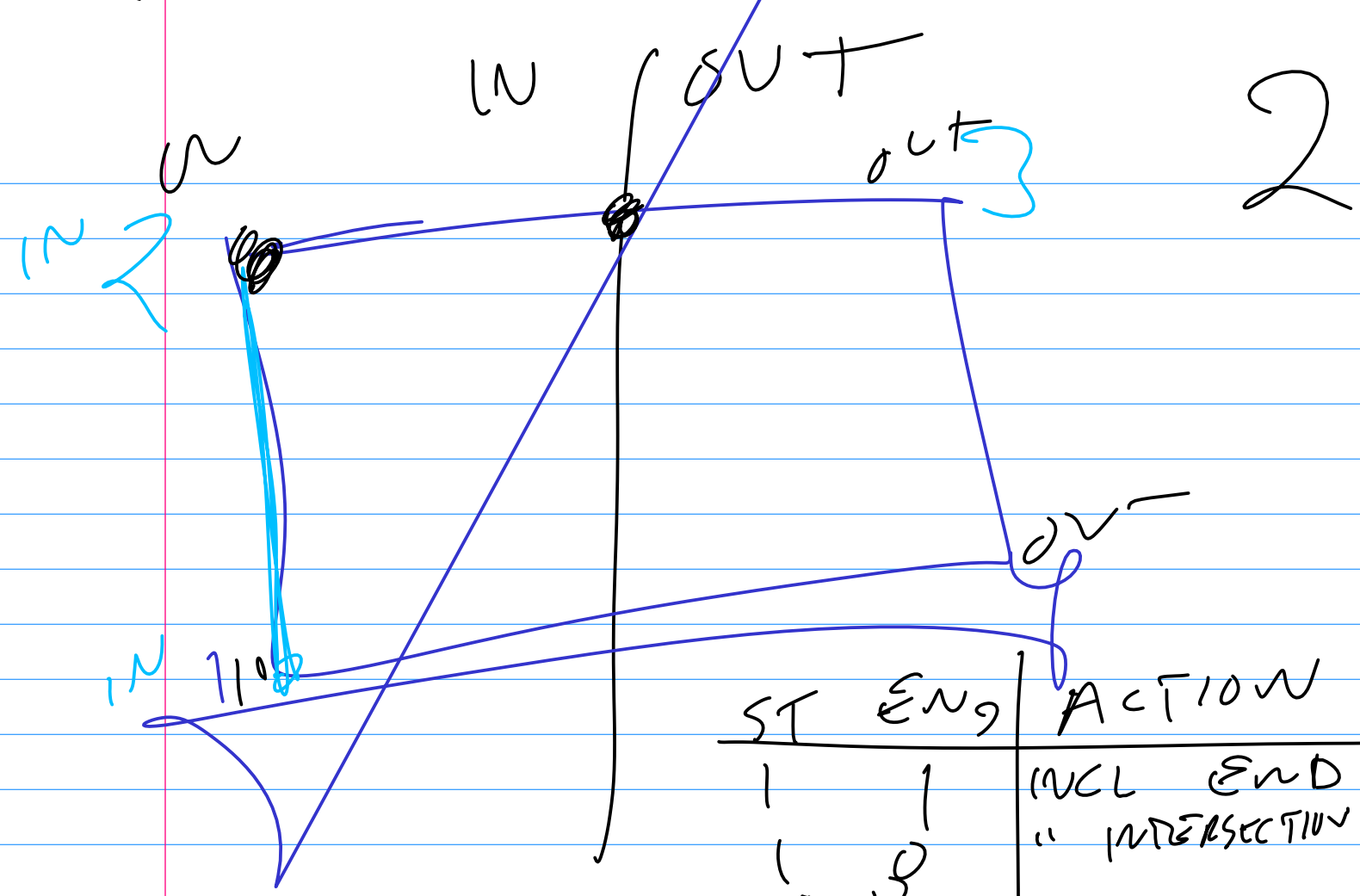
TERM PROJECT
5 MINUTE FF TALK.

3 LAST CLASSES MON
SUN OF NEXT WEEK:
COHEN-SUTHERLAND



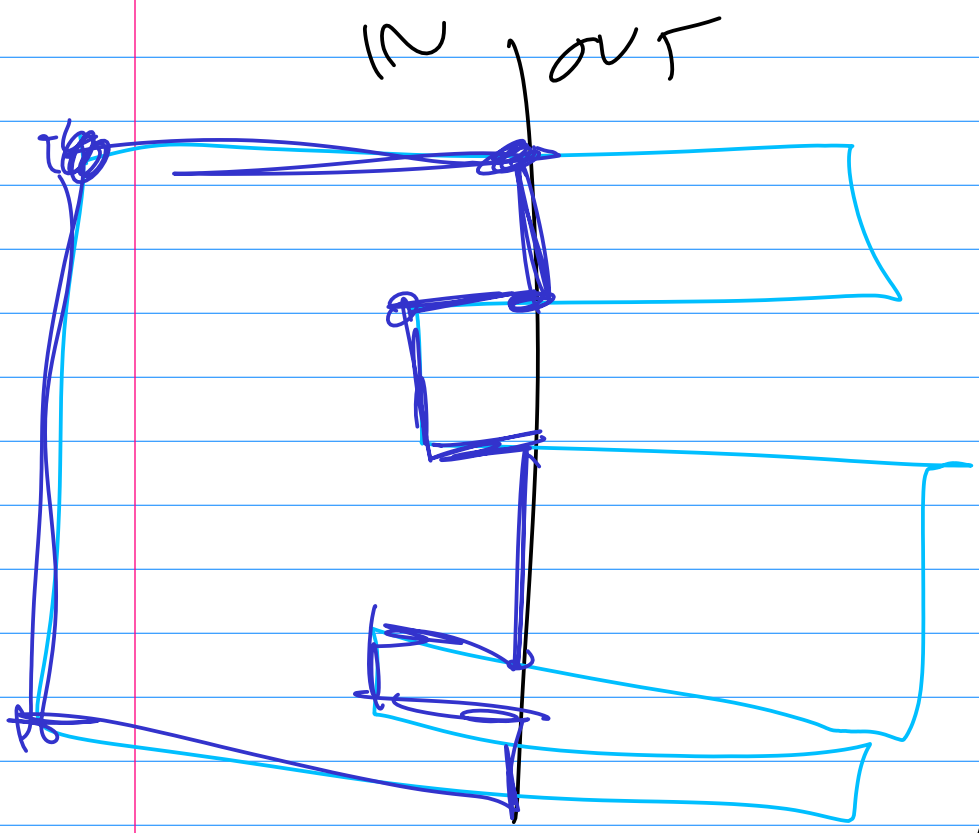
SUTHERLAND-HODGMAN

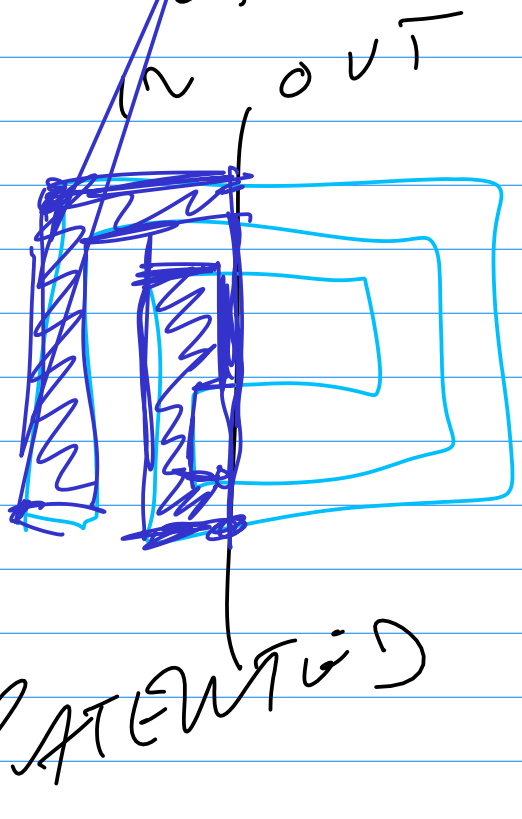


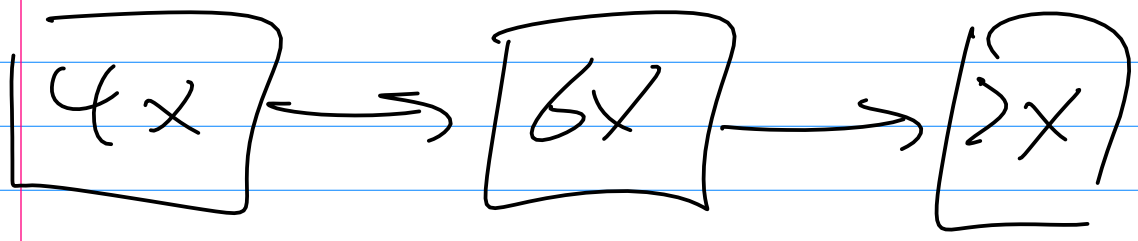


2

ST	END	ACTION
1	1	INCL END
		" INTERSECTION
1	0	
0	0	
0	1	INCL INTERSEC. & END.







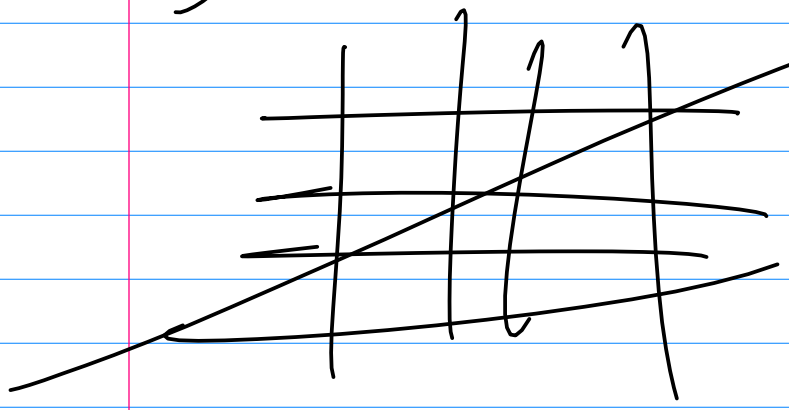
MATRIX OP

CLIP

FINAL MATRIX OP

12 COPIES OF SAME CHIP IN CLARK, SGI.

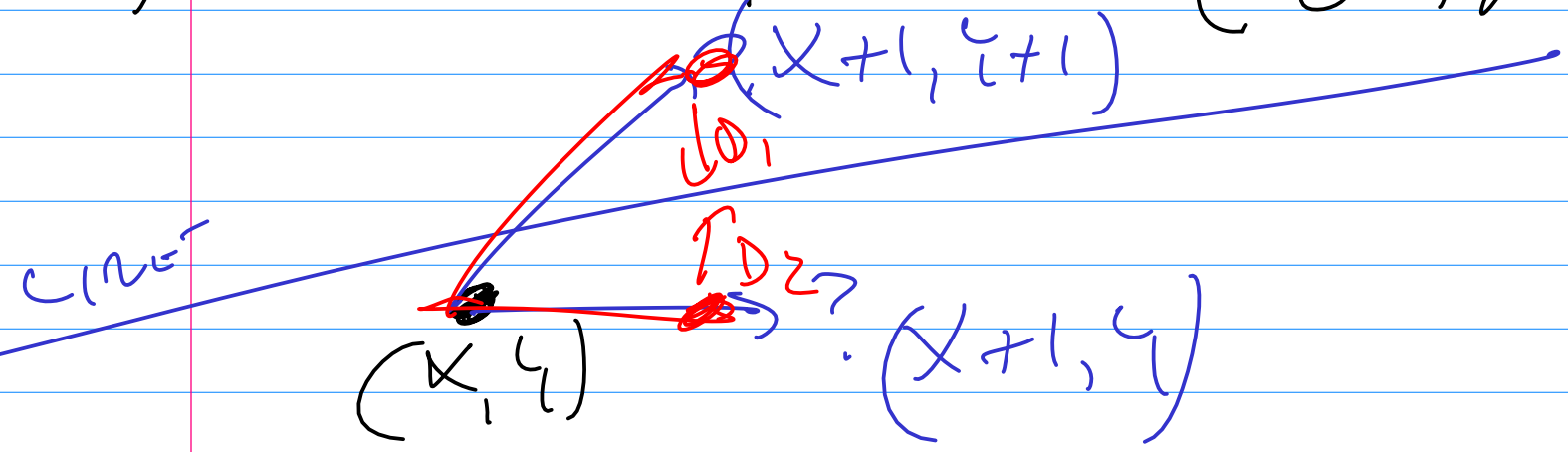
BRESENHAM



RASTERIZE LINE WITH SIMPLE DDA

BRESENHAM V2

BIG CONCEPTUAL LEAP



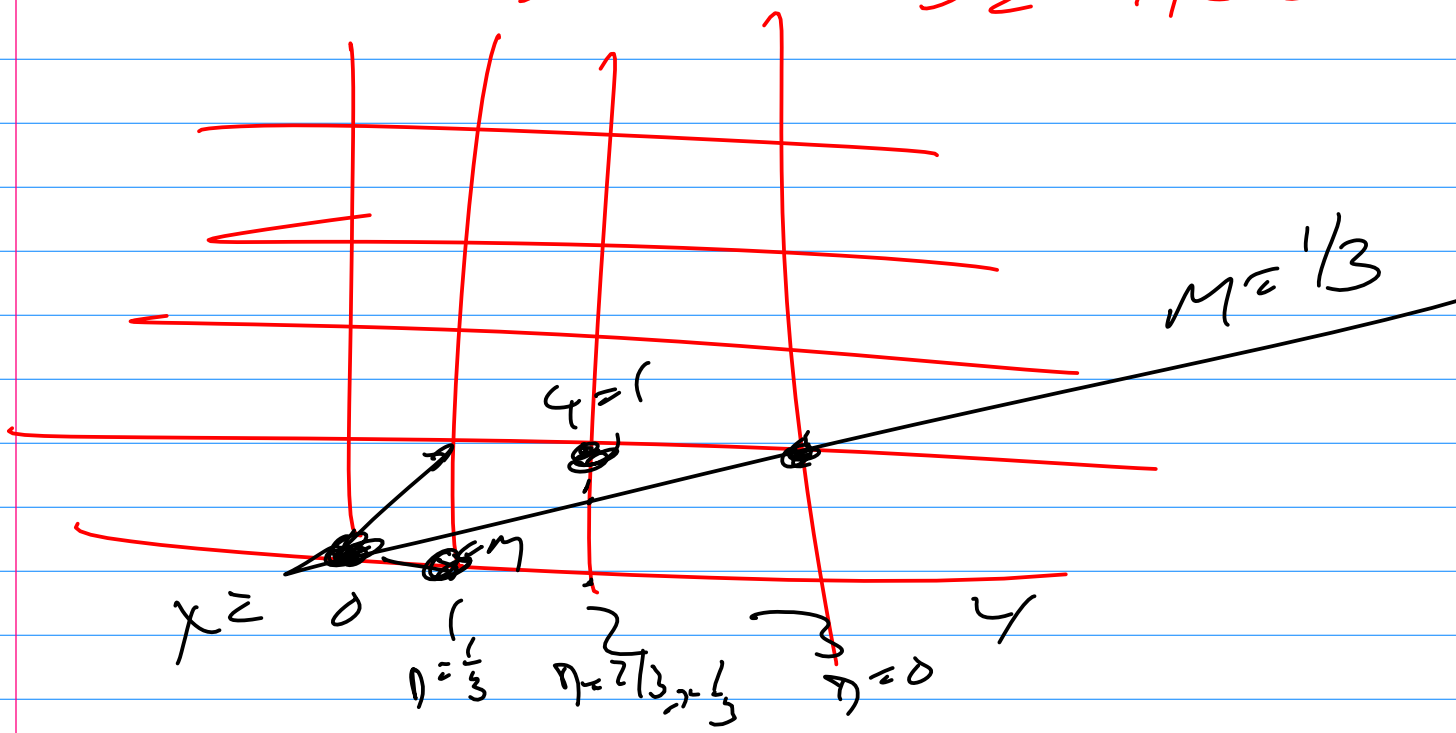
LAST PIXEL.

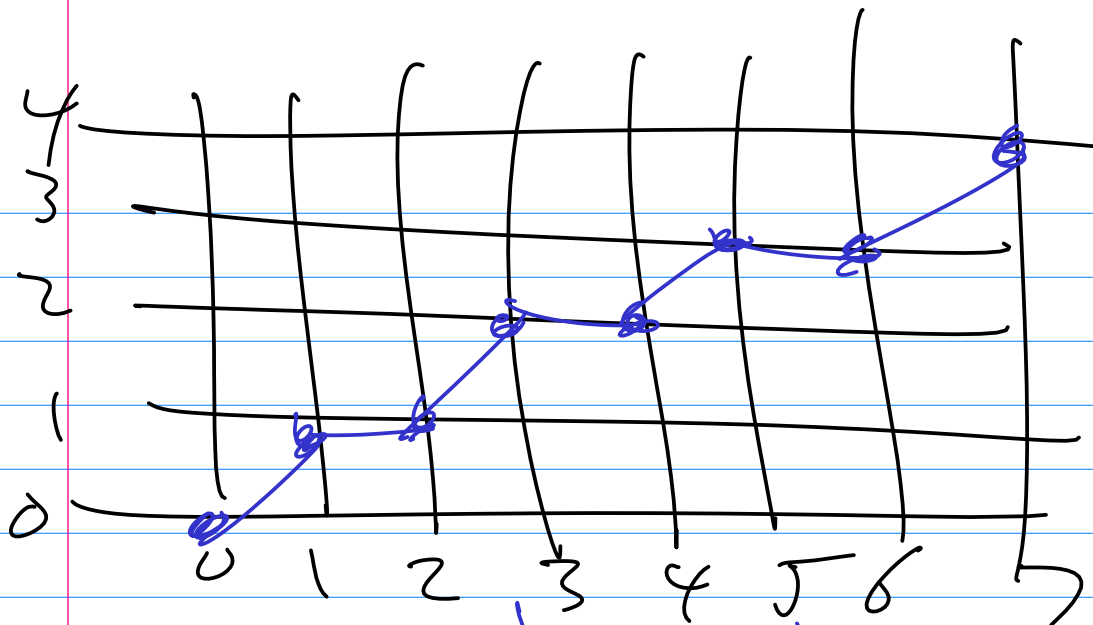
IS $D_1 \leq D_2$? YES: GONE.

NO: GO EAST

THEN WE'LL COMPUTE $D_1 - D_1$ FAST.

D ON WEB IS D_2 HERE.





$x_1 = 7$

$y_1 = 4$

$m = 4/7$

$D =$ 0 $4/7$ 1 $3/7$ $2/7$ $1/7$ $2/7$ $3/7$ $4/7$

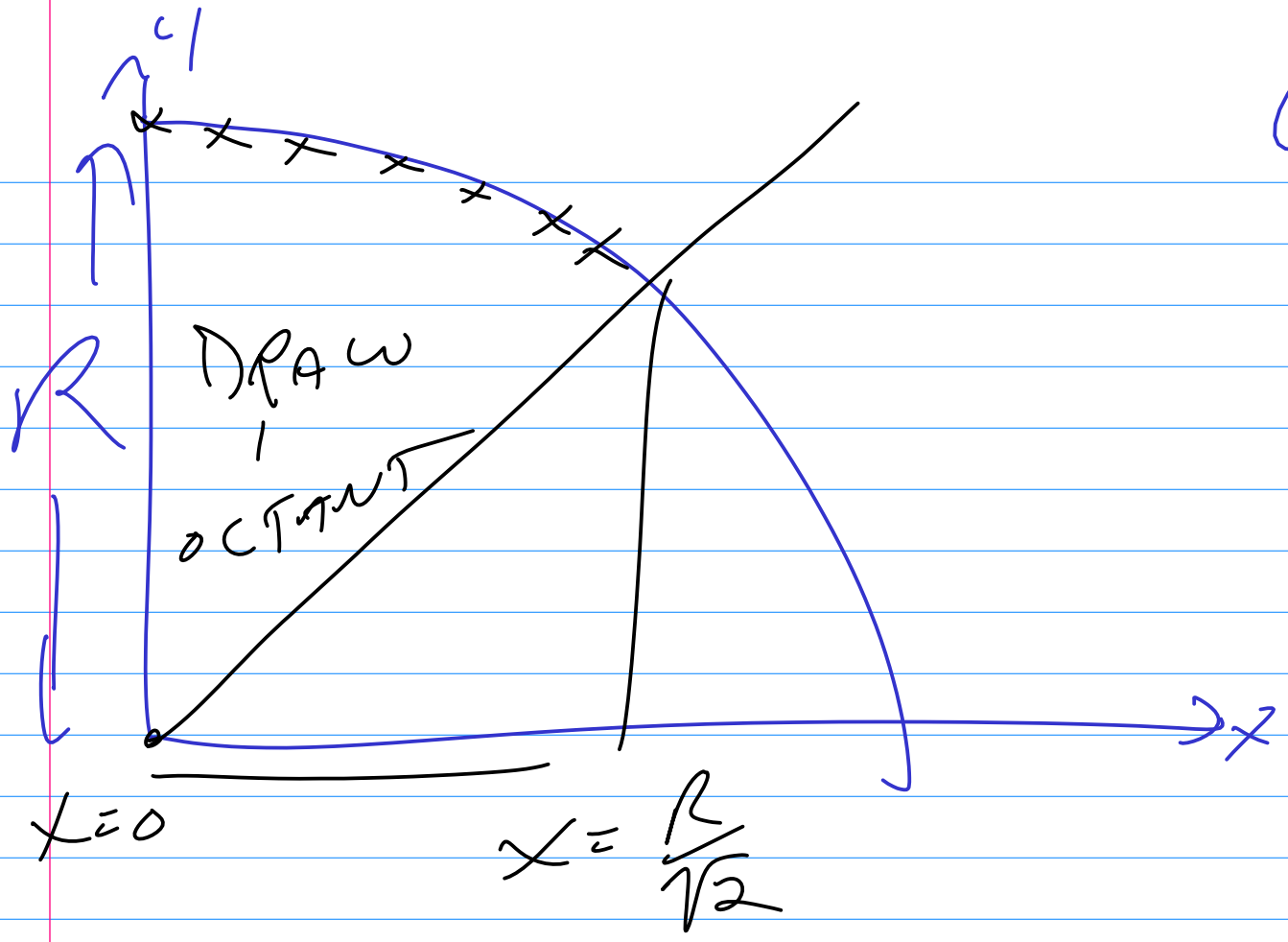
$y =$ 0 $-3/7$ $-2/7$ $-1/7$ 0

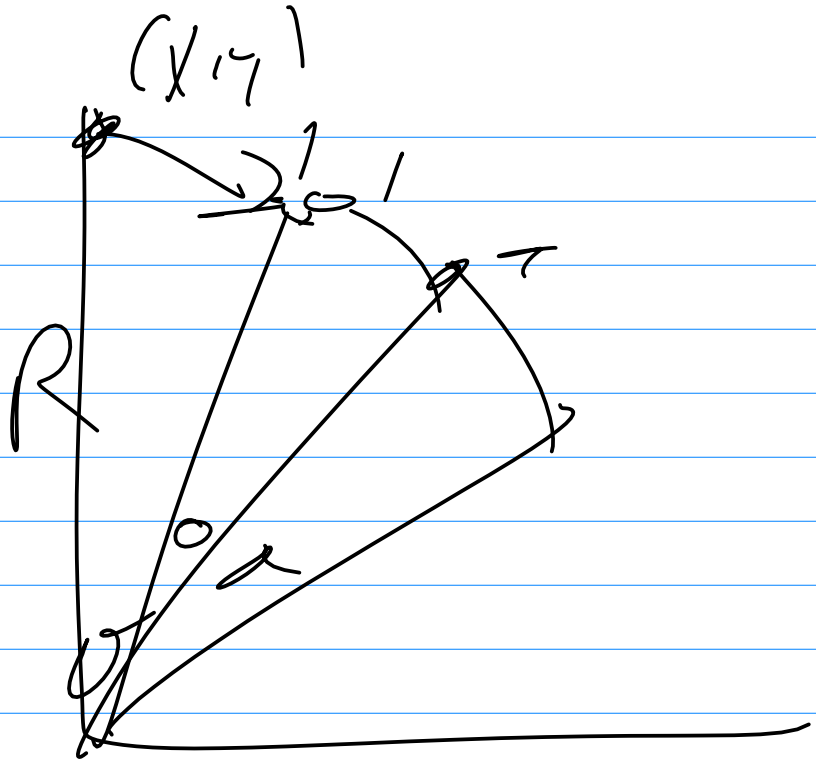
1

POINT OF THIS

1. FAST LINES
2. TRANSFORMING PROGRAMS

CIRCLES


y
R
DRAW
1
OCTANT
x
x=0
x = R/√2

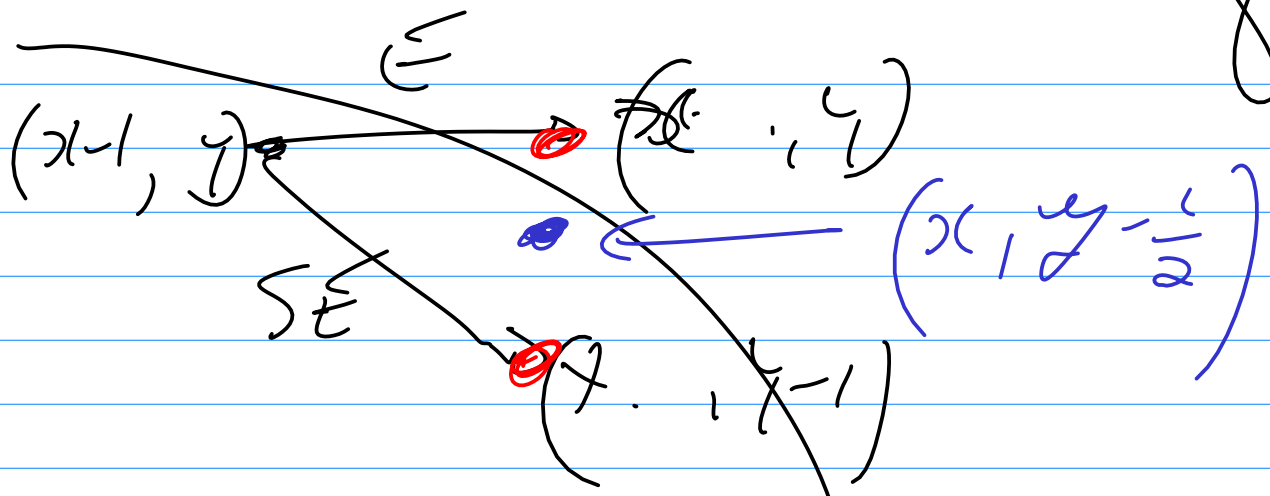


$$\alpha = \frac{1}{R} \quad \text{RADIANS}$$

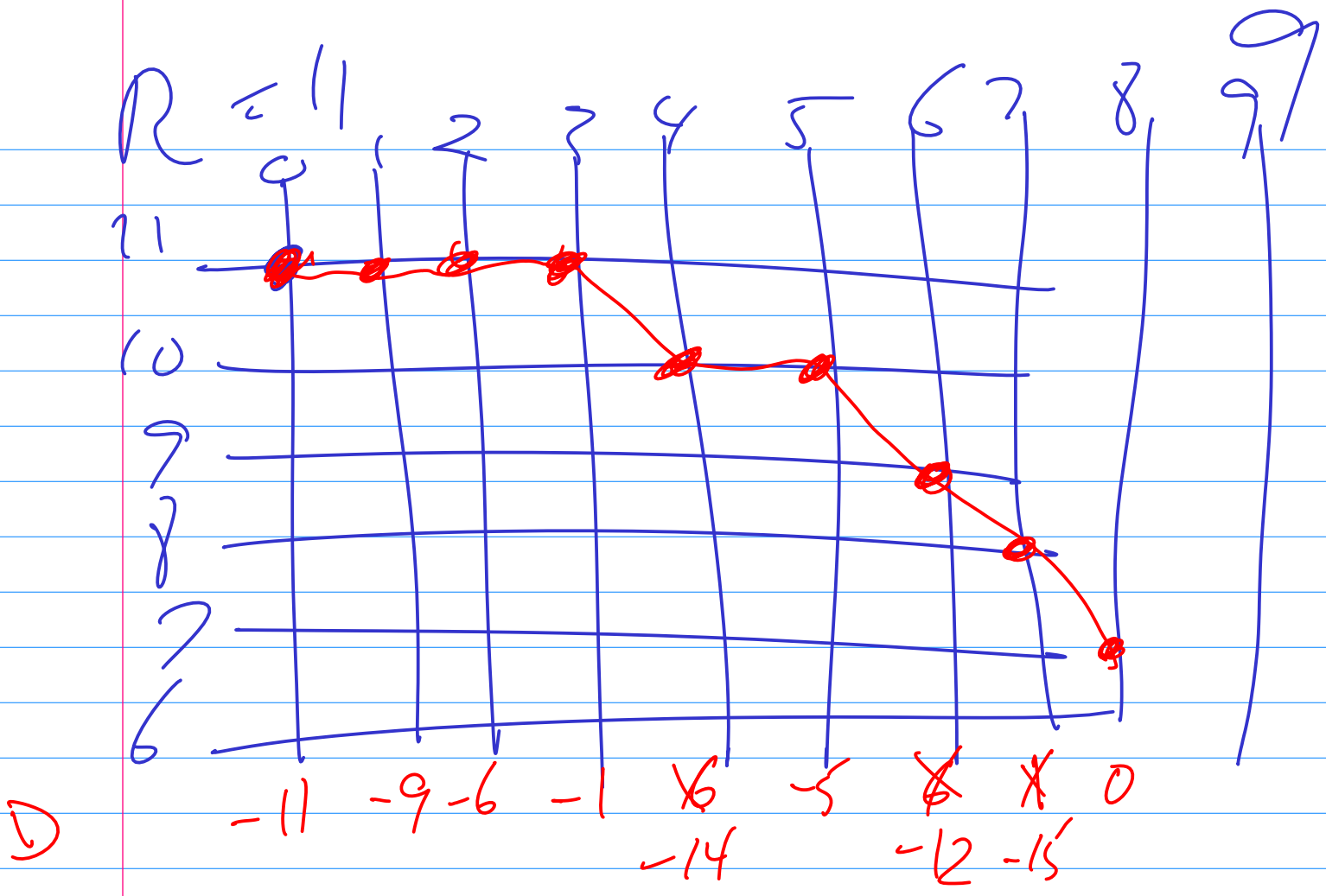
PARAMETRIC CIRCLE

$$x = R\,\frac{2t}{t^2+1} \qquad y = R\,\frac{t^2-1}{t^2+1}$$

$$x^2 + y^2 = R^2$$



BLUE PT: MIDWAY BETWEEN 2 POSSIBLE NEXT PIXELS IF ITS DISTANCE TO (0,0) < R, GO EAST ELSE GO SOUTHEAST



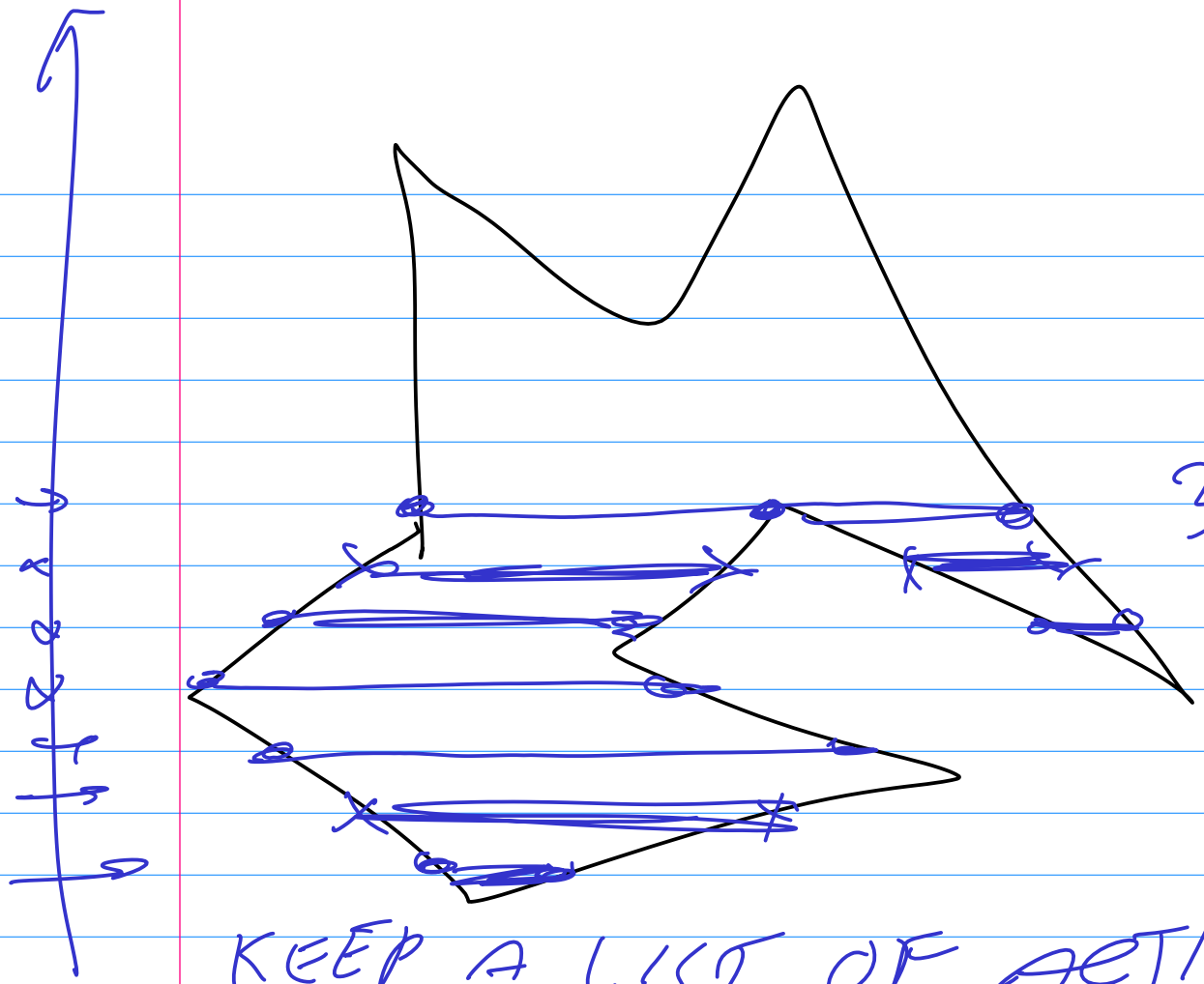
POLYGON FILLING

2 METHODS DEPENDING ON HOW POLYGON IS SPECIFIED.

1. LIST OF VERTICES

OR

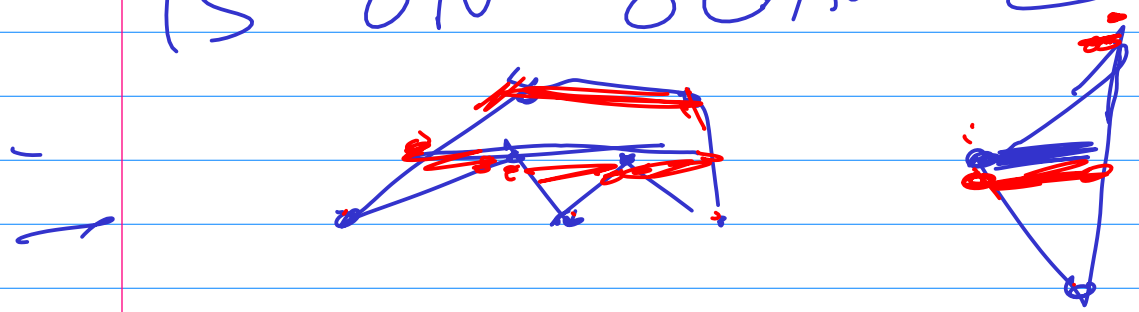
2. BOUNDARY PIXELS -



KEEP A LIST OF ACTIVE EDGES

WHERE AN EDGE CROSSES A SCAN LINE CHANGES LINEARLY

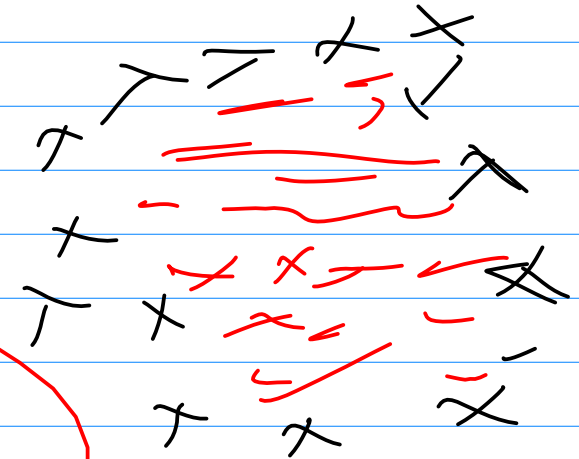
PROBLEM WHEN A VERTEX IS ON SCAN LINE



SOLUTION: PRETEND THAT ANY VERTEX ON A SCAN LINE IS REALLY SLIGHTLY ABOVE IT.

THAT LOOKS LIKE A HORRIBLE HACK BUT IS REALLY VALID (+ IS AN EXAMPLE OF SIMULATION OF SIMPLICITY)

POLIGON DEFINED BY BORDER PIXELS



SEED FILL

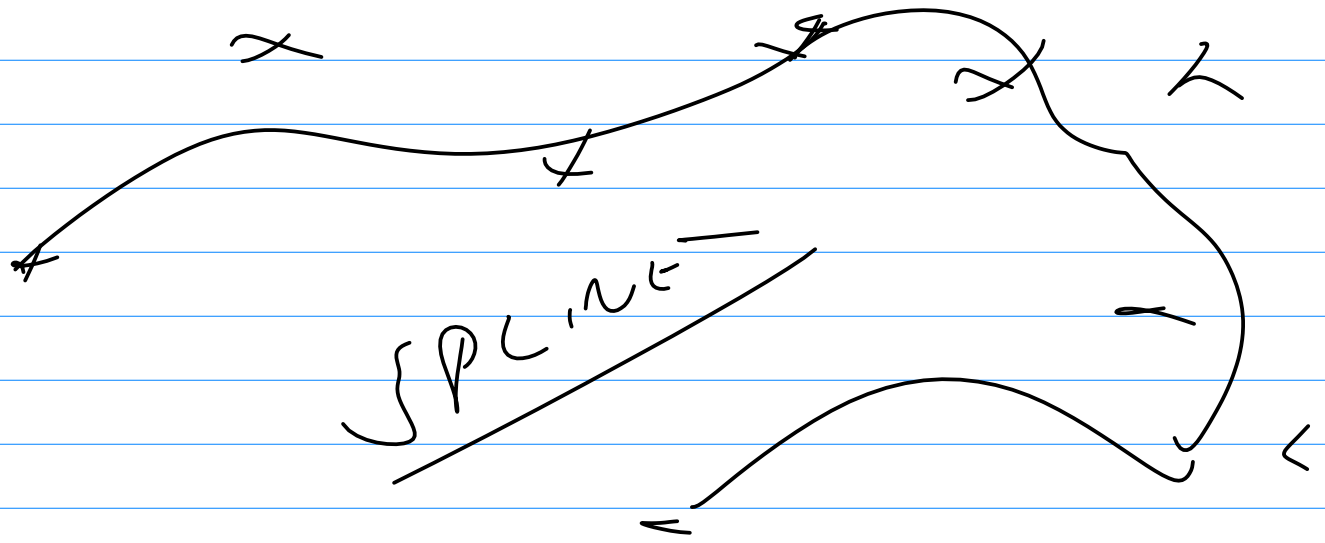
FLOOD FILL

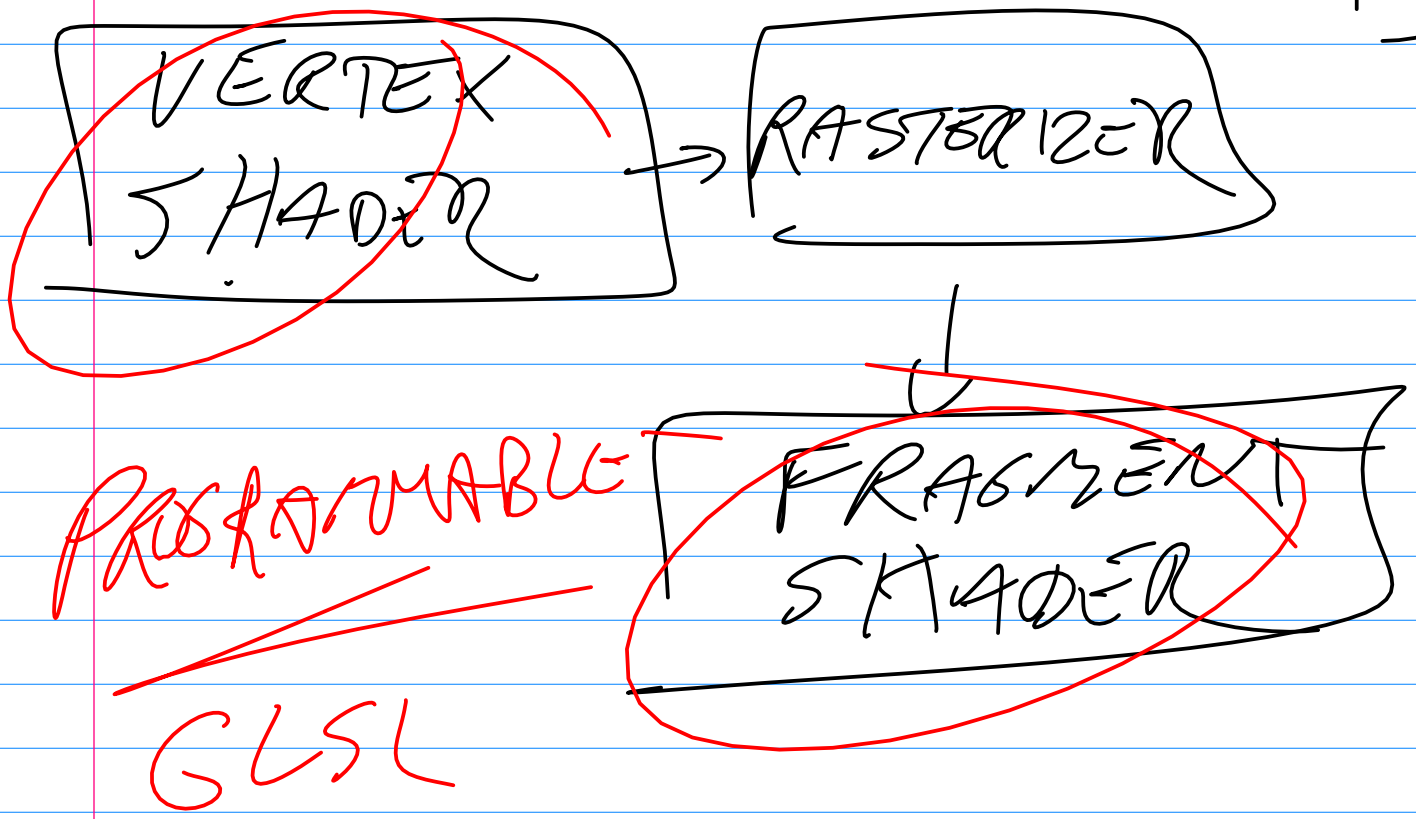
OUTLINE A REGION OF A B+W IMAGE THEN TINT PIXELS INSIDE REGION.

NEXT TIME plot

PART X PIPELINES

SKIP BEZIER - DO IN SPRING




VERTEX SHADER
RASTERIZER
FRAGMENT SHADER
PROGRAMABLE
GLSL