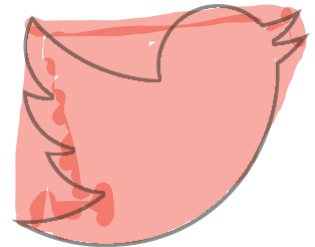
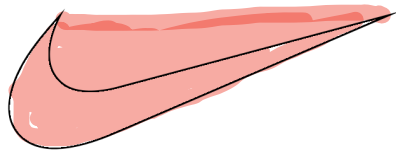
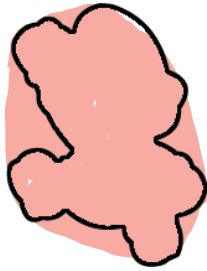


Name: _____

MA 1015: Homework #7

Question 1. For each of these pictures, draw the convex hull. (You can scribble right on top of it.)



Question 2. Think of a nice logo– make sure it's connected (don't use Apple, since it's in 2 pieces) and has no holes (don't use Target, since it's missing space on the inside).

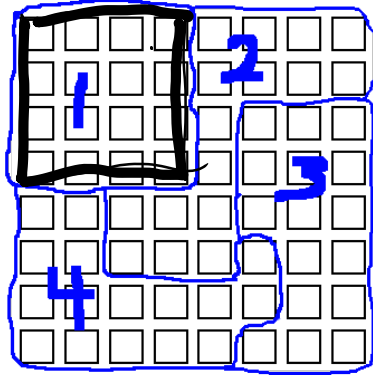
Draw the original logo by itself (you can just draw the outline, like I did above), and then draw it again with the convex hull on top of it.



Question 3. a) Find the Convex Hull ratio of each of these 4 districts. (I gave you the picture 4 times so you can draw on one for each district)

#1: Area = 16
CH area = 16

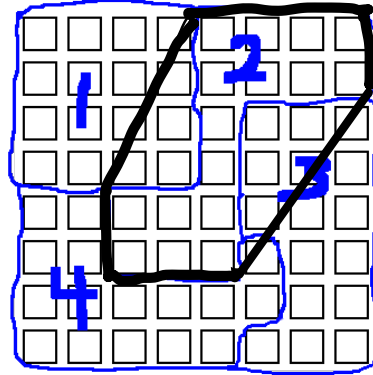
$$CH = \frac{16}{16} = 1$$



#2 Area = 16

CH Area = 26

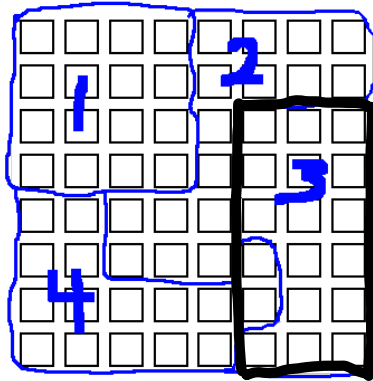
$$CH = \frac{16}{26} = .61$$



#3: Area = 16

CH area = 18

$$CH = \frac{16}{18} = .88$$

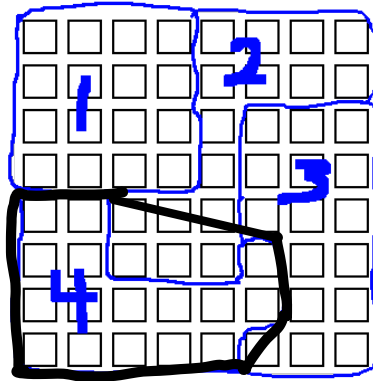


#4

Area = 16

CH Area = 21

$$CH = .76$$



b) According to the Convex Hull ratio, which shape is the weirdest (use a calculator so you can compare the values)? Which is the least weird?

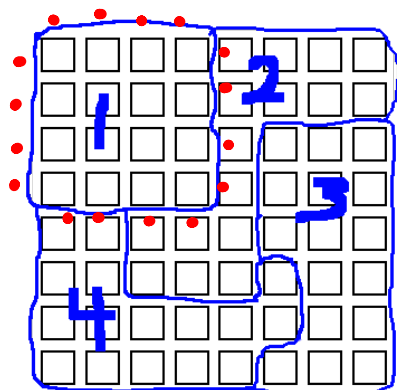
#2 is the weirdest

#1 is the least weird

Question 4. a) Find the isoperimetric quotient of each of these 4 districts. (I gave you the picture 4 times so you can draw on one for each district)

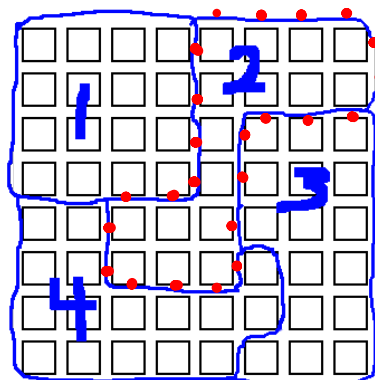
#1 $A = 16$
 $P = 16$

$$IQ = \frac{4\pi A}{P^2} = \frac{4\pi \cdot 16}{16^2}$$



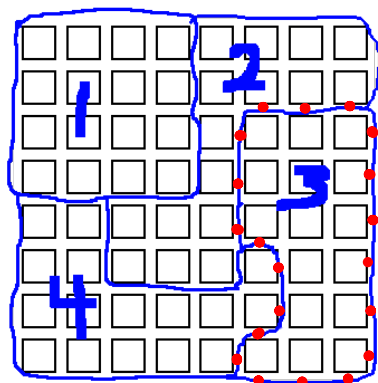
#2 $A = 16$
 $P = 24$

$$IQ = \frac{4\pi \cdot 16}{24^2}$$



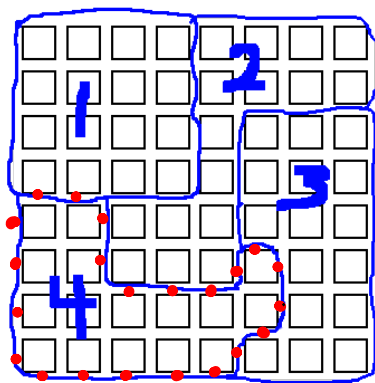
#3 $A = 16$
 $P = 20$

$$IQ = \frac{4\pi A}{P^2} = \frac{4\pi \cdot 16}{20^2}$$



#4
 $A = 16$
 $P = 22$

$$IQ = \frac{4\pi \cdot 16}{22^2}$$



b) According to the isoperimetric quotient, which shape is the weirdest (use a calculator so you can compare the values)? Which is the least weird?

$$\#1: \frac{4\pi \cdot 16}{16^2} = .78$$

$$\#2: \frac{4\pi \cdot 16}{24^2} = .34 \leftarrow \text{weirdest}$$

$$\#3: \frac{4\pi \cdot 16}{20^2} = .5$$

$$\#4: \frac{4\pi \cdot 16}{22^2} = .41$$

least weird