MAT 2 -110 Great Mathematical Ideas
Quiz 2 October 14, 2016

solution

NAME

This quiz is closed book, closed notes, calculators are allowed but no other devices. 10 pts. possible.

n=0 ———————————————————————

n=1 ——————————— ———————————

The first two steps in the construction of the Cantor set are shown above.

a. Draw the next two steps:

b. At step n=4, how many line segments are there?

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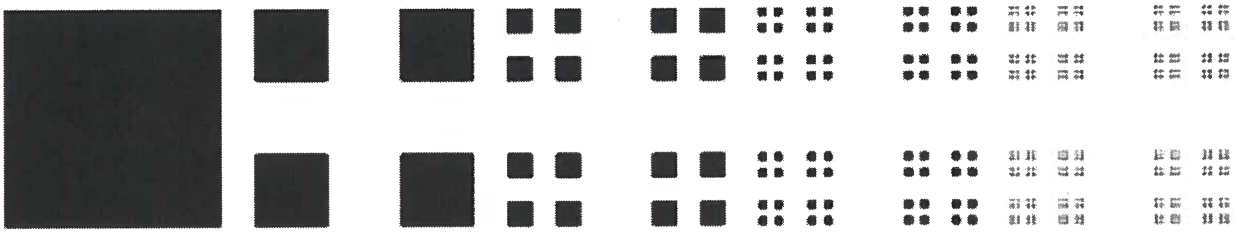
c. What is the self-similarity dimension of the Cantor set? Show your work. Answer both exactly and approximately.

$2 = 3^D \qquad D = \frac{\log 2}{\log 3} \doteq \frac{.3010}{.4771} \doteq .6309$

2.



Shown are the first several stages in the construction of a fractal. What is its self-similarity dimension? Show your work. Answer both exactly and approximately.

$4 = 3^D \qquad D = \frac{\log 4}{\log 3} \doteq \frac{.60205}{.4771} = 1.2618$