Math 103 Wednesday 5/27

1. You have an equilateral triangle each of whose sides has length 1. You trisect each side and put an equilateral triangle using the middle piece as the base. What is the perimeter of this new shape? You do this again. What is the perimeter of this shape? You do this again. What is the perimeter of this shape?

2. You have a square of perimeter 16. You draw a diagonal across the square. You draw as large a square as possible below the diagonal. You continue this process. How many squares do you draw? What is the total area contained in all these squares?

3. Solve the following equations. (a) $(2x-1)(x+3)=0$ (b) $x^2+2x-3=0$ (c) $2x^2+12x-9=0$

4. Write the following as polynomials.

(a) $\dfrac{1}{1-4x}$ (b) $\dfrac{1}{1-t^2}$ (c) $\dfrac{1}{1+\theta-\theta^2}$ (d) $\dfrac{1}{1-x-x^2}$ (e) $\dfrac{1+x}{1-x^2}$

5. Let $n \in N$. Give a value for the following two continued fractions.

(a) $n+\cfrac{1}{n+\cfrac{1}{n+\cfrac{1}{n+\cfrac{1}{\cdots}}}}$

(b) $1+\cfrac{n}{1+\cfrac{n}{1+\cfrac{n}{1+\cfrac{n}{\cdots}}}}$