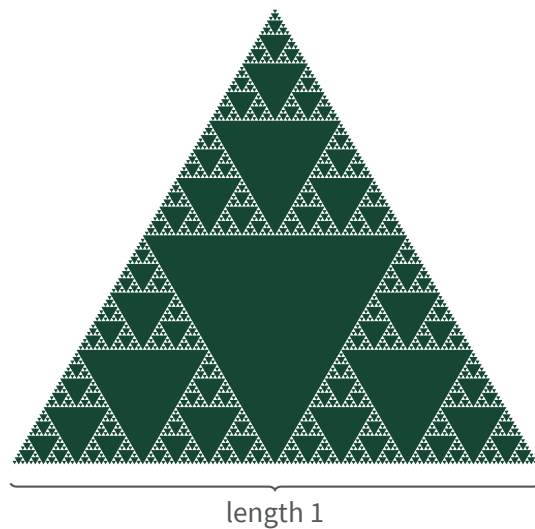# Math 143 Set 5

1. Find the shaded area (there are an infinite number of triangles):

length 1

2. Use the integral test to decide if $\displaystyle\sum_{n=1}^{\infty} \frac{n}{\sqrt{n^2+1}}$ converges.

3. Use the integral test to decide which values of p make $\displaystyle\sum_{n=2}^{\infty} \frac{1}{n(\ln n)^p}$ converge.

4. Do the following series converge or diverge? Give a reason why your answer is correct.

a. $\displaystyle\sum_{n=1}^{\infty} \frac{1+n^2}{1+n^4}$

b. $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n^{3+\sin n}}$

c. $\displaystyle\sum_{n=1}^{\infty} \frac{2+\sin n}{2^n}$

d. $\displaystyle\sum_{n=1}^{\infty} \frac{n+2}{(n+1)^3}$

e. $\displaystyle\sum_{n=1}^{\infty} \frac{1+3^n}{1+2^n}$

f. $\displaystyle\sum_{n=1}^{\infty} \frac{1}{2n+5}$

g. $\displaystyle\sum_{n=1}^{\infty} \frac{1}{\sqrt{n^3+1}}$