Math 131 Day 32

My Office Hours: M & W 12:30–2:00, Tu 2:30–4:00, & F 1:15-2:30 or by appointment. **Math Intern** Sun: 12–6pm; M 3-10pm; Tu 2–6, 7–10pm; W and Th: 5-10 pm in Lansing 310. Website: `http://math.hws.edu/~mitchell/Math131S13/index.html`.

Practice

Read **8.4** and review 8.3 about Series including the Integral test. **Read the online notes, too.** This is great stuff!

1. Try page 553ff #27, 29, 35, 39, 47, 49, and 51.

2. Try page 567ff #9, 11, 13, 15, 17, and 19.

Hand In

Finish WeBWorK Day 31B and begin WeBWorK Day 32B on series.

1. Let's start with three easy geometric series. Determine whether each converges and if so, to what.

a) $\displaystyle\sum_{n=0}^{\infty}\left(\frac{2}{3}\right)^n$ **b)** $\displaystyle\sum_{n=0}^{\infty}4\left(\frac{-2}{5}\right)^n$ **c)** $\displaystyle\sum_{n=0}^{\infty}6\left(\frac{5}{4}\right)^n$

2. Each of these has a twist that requires some adjustment. Slow down.

a) Page 553 #30. (Be careful!)

b) Evaluate $\displaystyle\sum_{n=0}^{\infty}3\left(\frac{2}{5}\right)^{2n}$. (Write out the first few terms to identify a and r.)

c) Evaluate $\displaystyle\sum_{k=1}^{\infty}4\left(\frac{1}{3}\right)^{k}$. (Write out the first few terms to identify a and r.)

d) Evaluate $\displaystyle\sum_{k=2}^{\infty}3\left(-\frac{1}{2}\right)^{k}$. (Write out the first few terms to identify a and r.)

3. Here's a telescoping series: $\displaystyle\sum_{k=0}^{\infty}\left(\frac{1}{k+2}-\frac{1}{k+4}\right)$.

a) Write out several terms of the nth partial sum S_n and then simplify it by telescoping.

b) Evaluate $\lim_{n\to\infty}S_n$ and determine $\displaystyle\sum_{k=0}^{\infty}\left(\frac{1}{k+2}-\frac{1}{k+4}\right)$.

4. Apply telescoping to $\displaystyle\sum_{k=0}^{\infty}\ln\left(\frac{k+2}{k+1}\right)$ by using a log property.

5. Apply telescoping to Page 554 #58.

6. Find the sum of the series $8+6+\frac{9}{2}+\frac{27}{8}+\frac{81}{32}+\cdots$. Hint: Is this a geometric series? What are a and r?

7. Split in two: Page 567 #12 and 14.

8. Bonus: Carefully read the Divergence Test on Page 559. Then read Example 2 on Page 560. Now do Page 567 #16, 18 and 20