

# Fall 2019 Math 152

## Week in Review 7

*courtesy: Amy Austin*

(covering section 11.6, 11.8)

### Section 11.6

1. Determine whether the following series converge absolutely, converge conditionally, or diverge.

a.)  $\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt{n}}$

b.)  $\sum_{n=1}^{\infty} \frac{(-1)^n n}{n+1}$

c.)  $\sum_{n=1}^{\infty} \frac{(-1)^n}{n^3 + n}$

d.)  $\sum_{n=2}^{\infty} \frac{(-1)^n}{n(\ln n)^2}$

e.)  $\sum_{n=2}^{\infty} \frac{\cos n}{n^4}$

f.)  $\sum_{n=2}^{\infty} \frac{(-1)^n}{6n+2}$

g.)  $\sum_{n=1}^{\infty} \frac{(-9)^n}{5^n n^{10}}$

h.)  $\sum_{n=1}^{\infty} \frac{(-7)^n}{(n+2)!}$

2. Explain why the Ratio Test is or is not conclusive (you decide which) for the following series:

a.)  $\sum_{n=1}^{\infty} \frac{(-1)^n}{n+2}$

b.)  $\sum_{n=1}^{\infty} \frac{(-7)^n n!}{(2n+1)!}$

### Section 11.8

3. For the following power series, find the radius and interval of convergence.

a.)  $\sum_{n=1}^{\infty} \frac{(-4)^n x^n}{n^2 + 5}$

b.)  $\sum_{n=1}^{\infty} \frac{(-1)^n (3x-1)^n}{\sqrt{n}}$

c.)  $\sum_{n=0}^{\infty} \frac{(2n)!(x+2)^n}{100^n}$

d.)  $\sum_{n=0}^{\infty} \frac{(x-1)^n}{(2n+1)!}$

4. Suppose it is known that  $\sum_{n=0}^{\infty} c_n x^n$  converges when  $x = 4$  and diverges when  $x = -10$ . What can be said about the convergence or divergence of the following series, if anything?

a.)  $\sum_{n=0}^{\infty} c_n (8)^n$

b.)  $\sum_{n=0}^{\infty} c_n (-3)^n$

c.)  $\sum_{n=0}^{\infty} c_n (12)^n$

d.)  $\sum_{n=0}^{\infty} c_n (-4)^n$

e.)  $\sum_{n=0}^{\infty} c_n (10)^n$