

# Homework #16 Final Answers

## Section 11.9

13a.  $\sum_{n=0}^{\infty} (-1)^{n+1} n x^{n-1}$  and  $R=1$

OR  $\sum_{n=1}^{\infty} (-1)^n n x^{n-1}$

blc  $n=0$  term 0 anyhow

OR  $\sum_{n=0}^{\infty} (-1)^{n+2} (n+1) x^n$   
 $\approx (-1)^n$   
 X Reindex

"Powers go up by 1, so counter goes down by 1"

16.  $\sum_{n=0}^{\infty} \frac{(-1)^n x^{6n+5}}{2n+1}$  and  $R=1$

25.  $\sum_{n=0}^{\infty} \frac{t^{8n+2}}{8n+2} + C$  and  $R=1$  still

28.  $\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)^2} + C$  and  $R=1$  still

## Section 11.10

#5, 6, 12, 14, 17  $\rightarrow$  all "Chart Method" "using the definition"

5.  $x + x^2 + \frac{x^3}{2!} + \frac{x^4}{3!} + \dots$  only asked for first 4 terms

6.  $\frac{1}{3} - \frac{1}{3^2}(x-2) + \frac{1}{3^3}(x-2)^2 - \frac{1}{3^4}(x-2)^3 + \dots$  only asked for first 4 terms

12.  $\sum_{n=0}^{\infty} \frac{(-1)^n x^{n+1}}{n+1}$  and  $R=1$  Run Ratio Test, but don't need to check endpoints

$\leftarrow$  Match the formula we know

14.  $\sum_{n=0}^{\infty} \frac{(-1)^n 2^n x^n}{n!}$  and  $R=\infty$  Run Ratio Test

17.  $\sum_{n=0}^{\infty} \frac{x^{2n+1}}{(2n+1)!}$  and  $R=\infty$  Run Ratio Test

Plus Q1/Q2: See class lecture  $\rightarrow$  Rederive Power Series for  $\ln(1+x)/\arctan x$   
 show why  $+C=0$ .