Info...

3hrs

Final Exam Review Problems Are Posted

Take time to submit your teacher evaluation on *CourseWare*.

21 **Note: Homework 13 is not due until the 29th!!** **Please consider taking the time to complete this survey.**	22 **EMCF38 due at 9am** Blank Slides: **page**, **4-per**, **video notes**, **video**	**23** **Complete the Online Teacher Evaluation by May 3 to Receive 5 Bonus Points**	24 **EMCF39 due at 9am** Notes: **page**, **4-per**	25 **Final Exam Review Video** (3 hours) **Notes**	26 **EMCF40 due at 9am** Notes: **page**, **4-per** (in-class partial review for test 4) The 3 hour **Video Review posted on the 20th** works through all of these problems, and more. Quiz in lab/workshop	27 **Quiz 13 closes** (11.5-11.6) **Test 4 starts**
28	29 EMCF41 due at 9am – All answers are C. Blank Slides: **page**, **4-per** Homework 13 due in lab/workshop **Last day of class**	30 **Practice Test 4 Closes**	May 1 **Final Exam Review Video** (3 hours) **Notes**	2 **Complete the Online Teacher Evaluation by May 3 to Receive 5 Bonus Points**	3 There are 20 questions on the final exam. More than half of them will be written. **Good Luck!!!**	4 **Quiz 14 closes** (11.7-11.8)
5	6 **Final Exam Starts**	**7**	8 **Practice Final Exam Closes**	9	10	11

Consider giving something back!

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Give the interval of convergence and radius of convergence

for the power series $\displaystyle\sum_{n=1}^{\infty}\frac{(x+1)^n}{2^n(n+1)}$. Centered at -1.

To get the radius of convergence, check

ABS conv.: $\displaystyle\sum_{n=1}^{\infty}\left|\frac{(x+1)^n}{2^n(n+1)}\right|$

$$=\sum_{n=1}^{\infty}\frac{|x+1|^n}{2^n(n+1)}$$

Thought: Probably $\dfrac{|x+1|}{2}<1$

$|x+1|<2$

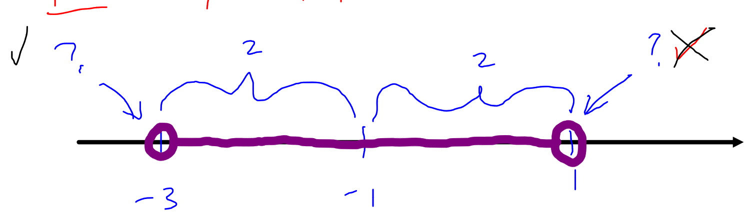
$$=\sum_{n=1}^{\infty}\left(\frac{|x+1|}{2}\right)^n\cdot\frac{1}{(n+1)}$$

root: $\displaystyle\lim_{n\to\infty}\left(\frac{|x+1|^n}{2^n(n+1)}\right)^{1/n}$

$$=\lim_{n\to\infty}\frac{|x+1|}{2}\cdot\underbrace{\frac{1}{(n+1)^{1/n}}}_{\to 1}=\frac{|x+1|}{2}$$

∴ the root test implies we have abs. conv. for $\dfrac{|x+1|}{2}<1$

i.e. $|x+1|<2$. Radius of conv is 2.



$\underline{x=-3}$: Subst $x=-3$ into the original series

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

conv. alt. series.
(Do it)

$\underline{x=1}$: Subst $x=1$ into the original series.

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

Diverges by LCT with $\sum \frac{1}{n}$.

$\therefore$ The radius of conv. is 2 and the interval of conv. is

$\underline{[-3, 1)}$.

Let $f(x)=\sum_{n=1}^{\infty}\frac{(x+1)^n}{2^n(n+1)}$. Give the value for $f^{(6)}(-1)$.

T.S. for $f(x)$ centered at -1.

$f(-1)+f'(-1)(x+1)+\frac{f''(-1)}{2}(x+1)^2+\frac{f'''(-1)}{6}(x+1)^3$

$+\cdots+\boxed{\frac{f^{(6)}(-1)}{6!}}(x+1)^6+\cdots$

From above, $\frac{1}{2^6(6+1)}=\frac{f^{(6)}(-1)}{6!}$

$\Rightarrow f^{(6)}(-1)=\frac{6!}{2^6\cdot 7}$

Popper 33

Give the radius of convergence for each power series. If your answer is ∞, then input 999.

This is a popper grade, and in addition, the score will replace your lowest popper grade.

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

2. $\displaystyle\sum_{n=1}^{\infty} 3^{n+1} x^n$ 1/3

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

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

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

6. $\displaystyle\sum_{n=0}^{\infty} \frac{x^n}{2n+1}$ 1

7. $\displaystyle\sum_{n=0}^{\infty} \frac{x^n}{2^n+1}$ 2

8. $\displaystyle\sum_{n=0}^{\infty} \frac{x^n}{n!} = e^x$ ∞

9. $\cos(x) = \displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n}}{(2n)!}$ ∞

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