Lecture 13

* Questions ....

Absolutely convergent series: $\sum |a_n| < \infty$

Conditionally convergent series: $\sum a_n$ converges, but $\sum |a_n| = \infty$.

* <u>Root Test</u>

$$L = \lim_{n \to \infty} \left| \frac{a_{n+1}}{a_n} \right|$$

If $L < 1$ then $\sum a_n$ absolutely converges

If $L > 1$ then $\sum a_n$ diverges.

$L = 1$: inconclusive (Test fails)

<u>Ex</u> :

$$\sum \frac{n}{2^n} \qquad\qquad \sum \frac{2^n}{n!}$$

$$\sum \frac{(-1)^n}{n} \qquad\qquad \sum \frac{2^n}{\sqrt{n!}}$$

* <u>Root Test</u>

$$\sum (-1)^n \left(\frac{2n-7}{5n+2} \right)^n$$

$$\sum \frac{2^n}{n^n}$$

$$\sum \frac{2^{n^2}}{n^2}$$