

M192

Lect #18

10/26/11

Three more req tests

- (e) Squeeze Th (Sandwich Th)
 - (f) Abs Val to zero Th
 - (g) Bounded Monotonic Th
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(e) Squeeze
Create a_n Given c_n
 Create b_n



If $a_n \geq c_n \geq b_n$ and
if $\lim a_n = \lim b_n = L$
Then $\lim c_n = L$

Ex $\left\{ \frac{\cos n}{n} \right\}_{n=1}^{\infty}$

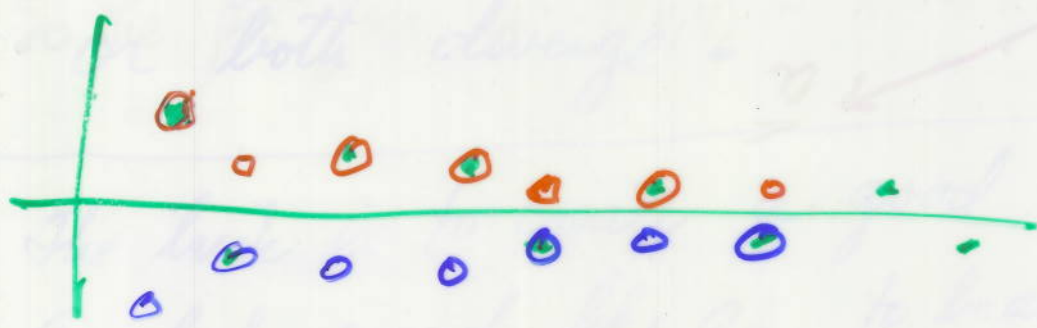
$$-\frac{1}{n} \leq \frac{\cos n}{n} \leq \frac{1}{n}$$

$\lim_{n \rightarrow \infty} -\frac{1}{n} = -0 = 0$ } The same

$\lim_{n \rightarrow \infty} \frac{1}{n} = +0 = 0$

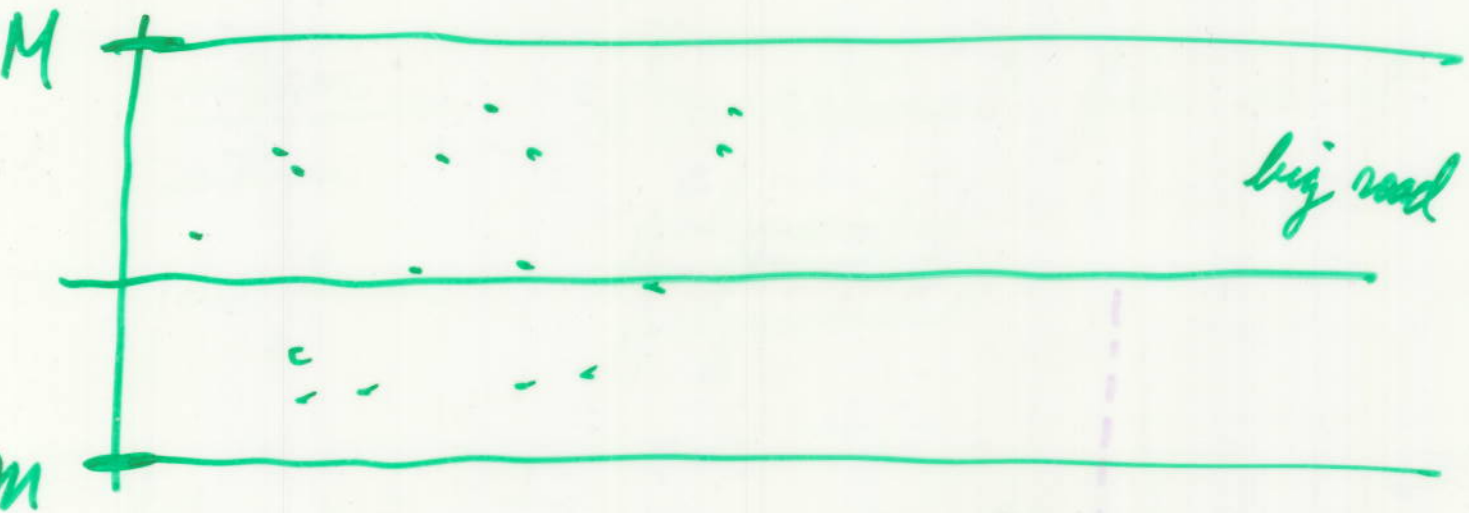
Thus $\lim_{n \rightarrow \infty} \frac{\cos n}{n} = 0$

Ⓐ Abs val to zero given C_n



if $\lim_{n \rightarrow \infty} |C_n| = 0$, then $\lim_{n \rightarrow \infty} C_n = 0$

⑨ Bounded Monotonic Th



Bdd: $m \leq a_n \leq M$ for all $n = 1, 2, \dots$

Monotonic



Bdd & Monotonic \Rightarrow seq converges

horizontal asymptote
vertical asymptote