LECTURE 18 part 1 : revision for mid-sem

* $z = x+iy$ "=" (x,y)
  ||
  $re^{i\theta}$
* $\mathbb{C}$ as a field (not ordered, can't be ordered)
* Arg vs arg (vs Qrg)
* $e^{i\theta} = \cos\theta + i\sin\theta$
* $e^{in\theta} = \cos n\theta + i\sin n\theta$
* nth roots.
* quadratic formula.
* f^n's as mappings (linear, $\frac{1}{z}$)
* Möbius transformations
* In partic. $\left\{\begin{matrix}\text{lines}\\ \text{circles}\end{matrix}\right\} \to \left\{\begin{matrix}\text{lines}\\ \text{circles}\end{matrix}\right\}$
* Riemann sphere
  $\bar{\mathbb{C}}$, Möbius transforms $\bar{\mathbb{C}} \to \bar{\mathbb{C}}$.
* inverse f^'s (inv of exp?)
* log vs Log (vs Log)
* branch, branch cut.
* trig & hyperbolic f^'s (inverses, zeros, identities)
* bounded & unbded f^'s
* basic topology on $\mathbb{C}$ (& on $\bar{\mathbb{C}}$)

- Limits (included ∞)
- continuity, differentiability
- Cauchy-Riemann { rectangular, polar, Wirtinger

CR as necessary cond^{n}s for $\mathbb{C}$-diff^{bility}, covered sufficient cond^{n}s.

- Analytic f^{n}s

(real analytic vs smooth f^{n}s in $\mathbb{R}^n$)

nt examinable in mid-sem.