Things to know for the PM450 exam

- All definitions
- Statements of any theorem with a name.
- Techniques used in class and on assignments

Theorems with proofs

(1) Converting higher order ODEs to a fixed point problem
(2) Thm. $\{A_n\}$ bounded implies $u(r,\theta) = \sum_{-\infty}^{\infty} A_n r^{|n|} e^{in\theta}$ is harmonic.
(3) Poisson's theorem
(4) Maximum principle
(5) Thm. $\{k_n\}$ summability kernel, $f \in \mathrm{C}(\mathbb{T})$, then $f * k_n \to f$ uniformly.
(6) Thm. $E \subset \mathbb{R}$ is measurable iff $\exists G_\delta$ set $G \supset E$ s.t. $m^*(G \setminus E) = 0$.
(7) Egorov's theorem
(8) Fatou's lemma
(9) Lebesgue Dominated Convergence Theorem
(10) Minkowski's inequality
(11) Thm. Translation is continuous on $L^p(\mathbb{T})$ for $1 \leq p < \infty$.
(12) Riemann-Lebesgue lemma for $L^1(\mathbb{T})$.