Objectives.
(1) Define stability
(2) Use Von Neumann stability analysis
(3) Summarize the Lax Convergence Theorem

TODO.
(1) Find the website
(2) Show instability of FTFS
(3) Read about Von Neumann
(4) Read 2.2.2, 2.4, 2.4.1, 2.4.2 in dS notes.

Questions.
(1) What is the symbol for BTCS?

(2) What does Von Neumann stability analysis say about BTCS?

(3) Draw \( \lambda \leq 1 \) and \( \lambda \geq 1 \) on a grid with \( \Delta t \) and \( \Delta x \).

(4) Conceptually, what does the condition
\[
\max |S(k)| \leq 1
\]
mean?

(5) Under what conditions on \( P^{-1}Q \) and \( P^{-1} \) will
\[
\|(P^{-1}Q)^nP^{-1}\|
\]
not blow up?

(6) What is the strong form of the Lax Convergence Theorem? What does it imply?