This homework is optional—if you hand it in, that will be recorded (and a missed homework later will be treated generously) Thank you for patience with the videotaping process!

**MATLAB 1**  Draw decent figures of the (complex) Runge-Kutta stability regions

\[ |1 + z + z^2/2| \leq 1 \quad \text{AND} \quad |1 + z + z^2/2 + z^3/6 + z^4/24| \leq 1. \]

**MATLAB 2**  Solve \( u' = -10u \) by at least two of the second order methods. Stop at \( t = 1 \), and check the accuracy (do the numbers support \( (\Delta t)^2 \)?). How serious is the stability test on \(-10 \Delta t\)?