AMCS 390 Fall 2017 Homework 5

Come prepared to present your solutions on Thursday, October 12th.

For each method below, find the largest "apparent" SSP coefficient you can by rewriting the method in terms of combinations of forward Euler steps.

1. The 2-stage 2nd-order RK method with smallest truncation error:

$$\begin{array}{c|cc} 0 & 0 & 0 \\ \frac{2}{3} & \frac{2}{3} & 0 \\ \hline & \frac{1}{4} & \frac{3}{4} \end{array} \tag{1}$$

2. "The" Runge-Kutta method:

$$\begin{array}{c|cccc} & & & & \\ \frac{1}{2} & \frac{1}{2} & & & \\ \frac{1}{2} & & \frac{1}{2} & & \\ 1 & & & 1 & \\ \hline & \frac{1}{6} & \frac{1}{3} & \frac{1}{3} & \frac{1}{6} \end{array} \tag{2}$$