

MM546/834 PDEs: theory, modeling and computing

Self-study and exercise problems, no 7

1. Implement efficient, preassembled two stage SDIRK methods for the diffusion equation.
2. Using B-trees (or otherwise), find conditions on γ for second and third order respectively.
3. Show the methods are A-stable for $\gamma \geq 1/4$.
4. Show the methods are L-stable for $\gamma = 1 \pm \sqrt{2}/2$.