|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Forward Euler | Backward Euler | Crank-Nicolson | Runge-Kutta 4 (explicit) |
| Rule / Formula  (scalar) |  |  |  |  |
| Sketch |  |  |  | https://upload.wikimedia.org/wikipedia/commons/thumb/7/7e/Runge-Kutta_slopes.svg/1280px-Runge-Kutta_slopes.svg.png  Figure: https://en.wikipedia.org/wiki/Runge%E2%80%93Kutta\_methods |
| Error |  |  |  |  |
|  | Implicit / Explicit | Implicit / Explicit | Implicit / Explicit | Implicit / Explicit |
| Stability | Conditional / Unconditional | Conditional / Unconditional | Conditional / Unconditional | Conditional / Unconditional |
| Oscillates? | Yes / No | Yes / No | Yes / No | Yes / No |

Explicit: Implicit:

Conditionally Stable: Unconditionally Stable: