<u>Idea:</u> approx. $\tilde{y}_{j+1/2}$ with half EE step

Is this better?

<u>Ex.:</u> (10) Approx. IVP of Ex. (6) with above scheme

$\rightsquigarrow$ Slides (Runge's Method)

We observe in the above numerical experiment that the GTE of this scheme is $\mathcal{O}(h^2)$. Hence it's order of accuracy is $p=2$ (and it is indeed more accurate than the Euler methods).

We could compute the LTE..

$$e_j = y(t_j) - \Big[y(t_{j-1}) + h \cdot f\Big(t_{j-1} + \frac{h}{2}, y(t_{j-1}) + \frac{h}{2} f(t_{j-1}, y(t_{j-1}))\Big)\Big]$$

$$= \ldots \text{ easy, but tedious } \ldots$$

$$= \mathcal{O}(h^{\overset{2+1}{3}})$$