(ii) the above pseudo-code is far from complete as one also wishes to increase the step size if possible

(iii) no guarantee that the error estimate reflects the true error.
however, often works well in practice.

Ex.: (18) Adaptive step size method (MATLAB ode45) for the van der Pol ODE:

$$\dot{y}_1 = y_2$$
$$\dot{y}_2 = \mu\left(1 - y_1^2\right) y_2 - y_1$$

with $\mu = 1$ and $\vec{y} = \begin{pmatrix} 2 \\ 0 \end{pmatrix}$, $t \in [0, 20]$

$\rightsquigarrow$ 5 slides

(19) " with $\mu = 1000$ and $t \in [0, 3000]$ (locally) makes the problem very stiff!

$\rightsquigarrow$ 5 slides & exercises

06.11.24