

DLN 2.4.6
cont

From 4.37 we expect

7/7

$$\vec{y}_{true} - \vec{y}_{corr} \approx \left(\frac{1}{3}\right)^5 a_4 \frac{d^5}{dx^5} \vec{y} \Big|_{x_3}, \quad a_4 = -\frac{19}{720}$$

$$\frac{d^5}{dx^5} \vec{y} \Big|_{x_4} = \begin{pmatrix} -\frac{d^5}{dx^5} \sin x \\ -\frac{d^5}{dx^5} \cos x \end{pmatrix} \Big|_{x_3} = \begin{pmatrix} -\cos(1) \\ \sin(1) \end{pmatrix}$$

$$\vec{y}_{true} - \vec{y}_{corr} \approx \left(\frac{1}{3}\right)^5 \left(\frac{-19}{720}\right) \begin{pmatrix} -\cos 1 \\ \sin 1 \end{pmatrix} = \begin{pmatrix} 5.9 \times 10^{-5} \\ -9 \times 10^{-5} \end{pmatrix}$$

This agrees well with the
actual error