

Z.C.4.1.13.

$$y = c_1 e^x \cos x + c_2 e^x \sin x$$

Lösningar till $y'' - 2y' + 2y = 0$.

$$y = c_1 e^x \cos x - c_1 e^x \sin x + c_2 e^x \sin x + c_2 e^x \cos x$$

a)

$$\begin{aligned} \text{Villkor:} \quad & 1 = y(0) = c_1 \\ & 0 = y(\pi) = e^\pi (c_1 + c_2) \end{aligned}$$

$$y = e^x (\cos x - \sin x)$$

b)

$$\begin{aligned} \text{Villkor:} \quad & 1 = y(0) = c_1 \\ & -1 = y(\pi) = -e^\pi c_1 \end{aligned}$$

Lösning saknas.

c)

$$1 = y(0) = c_1$$

Villkor:

$$1 = y\left(\frac{\pi}{2}\right) = e^{\frac{\pi}{2}} c_2$$

$$y = e^x \left(\cos x + e^{-\frac{\pi}{2}} \sin x \right)$$

d)

$$0 = y(0) = c_1$$

Villkor:

$$0 = y(\pi) = -e^{\pi} c_1$$

$$y = c_2 e^x \sin x$$