$$y' + y \cdot \cos(x) = \sin(2 \cdot x) \quad \text{met } y(x=0) = 3$$

$$y' + \underbrace{\cos(x)}_{P(x)} \cdot y = \underbrace{\sin(2 \cdot x)}_{Q(x)} \;:\; y' + P(x) \cdot y = Q(x)$$

Dus lineaire diff. vgl.

$$\mu(x) = e^{\int P(x) \cdot dx} = e^{\int \cos(x) \cdot dx} = e^{\sin(x)}$$

oplossing: $y = \frac{1}{\mu(x)} \cdot \left[\int \mu(x) \cdot Q(x) \cdot dx + c \right]$

$$y = e^{-\sin(x)} \cdot \left[\int e^{\sin(x)} \cdot \sin(2 \cdot x) \cdot dx + c \right]$$

$$= e^{-\sin(x)} \cdot \left[2 \cdot (\sin(x) - 1) \cdot e^{\sin(x)} + c \right]$$

$$= c \cdot e^{-\sin(x)} + 2 \cdot (\sin(x) - 1)$$

c bepalen met punt $(x = 0, y = 3)$:

$$3 = c \cdot e^{-\sin(0)} + 2 \cdot (\sin(0) - 1) \Rightarrow 3 = c \cdot 1 + 2 \cdot (0 - 1)$$

$$\Rightarrow 5 = c$$

$$\Rightarrow y = 5 \cdot e^{-\sin(x)} + 2 \cdot (\sin(x) - 1)$$