

Oefening 3

$$\frac{d^2 \mathbf{a}}{dt^2} = (5t, -7t^3, 5 \cos 2t)$$

\Downarrow

$$\frac{d\mathbf{a}}{dt} = \left(\frac{5}{2}t^2 + c_1, -\frac{7}{4}t^4 + c_2, \frac{5}{2}\sin 2t + c_3 \right)$$

$$\Downarrow \quad \left. \frac{d\mathbf{a}}{dt} \right|_{t=0} = (3, 0, 0) \Rightarrow \begin{cases} c_1 = 3 \\ c_2 = 0 \\ c_3 = 0 \end{cases}$$

$$\frac{d\mathbf{a}}{dt} = \left(\frac{5}{2}t^2 + 3, -\frac{7}{4}t^4, \frac{5}{2}\sin 2t \right)$$

\Downarrow

$$\mathbf{a} = \left(\frac{5}{6}t^3 + 3t + d_1, -\frac{7}{20}t^5 + d_2, -\frac{5}{4}\cos 2t + d_3 \right)$$

$$\Downarrow \quad \mathbf{a}|_{t=0} = (1, -1, -1) \Rightarrow \begin{cases} d_1 = 1 \\ d_2 = -1 \\ d_3 = \frac{1}{4} \end{cases}$$

$$\mathbf{a} = \left(\frac{5}{6}t^3 + 3t + 1, -\frac{7}{20}t^5 - 1, -\frac{5}{4}\cos 2t + \frac{1}{4} \right)$$