

Bewegende schaduw

$$\begin{aligned} 11. \quad L(t) = x_A - x_B &= \cos(t - \pi/6) - \cos(t + \pi/6) = \\ &= -2 \cdot \sin(t) \cdot \sin(\pi/6) = \\ &= -2 \cdot \sin(t) \cdot (-\frac{1}{2}) = \sin t \end{aligned}$$

$$12. \quad g = \frac{1}{\pi} \int_0^{\pi} \sin t \, dt = \frac{1}{\pi} \cdot [-\cos t]_0^{\pi} = \frac{1}{\pi} \cdot (1+1) = \frac{2}{\pi}$$

$$\begin{aligned} 13. \quad L(t) &= \sin t = \frac{2}{\pi} \\ y_1 &= \sin t \\ y_2 &= \frac{2}{\pi} \\ \text{intersect levert:} \quad t &= 0,69 \text{ of } t = 2,45 \\ L(t) > \frac{2}{\pi} : \quad 2,45 - 0,69 &= 1,76 \text{ sec} \\ L(t) < \frac{2}{\pi} : \quad \pi - 1,76 &= 1,38 \text{ sec} \\ \text{Beide delen zijn dus niet even groot.} \end{aligned}$$