

$$\begin{aligned}
 1.1) \quad \int_C \mathbf{z} \cdot d\mathbf{s} &= \int_C \mathbf{z} \cdot \frac{d\mathbf{x}}{dt} dt = \int_C \left(\cos t - t \sin t, \sin t + t \cos t, 1 \right) \cdot \left(-\sin t, \cos t, 1 \right) dt \\
 &= \int_C \left(-\sin^2 t - t \sin^2 t + \sin^2 t + t \cos^2 t + 1 \right) dt \\
 &= \int_C \left(-t \sin^2 t + t \cos^2 t + 1 \right) dt
 \end{aligned}$$

$$\begin{aligned}
 &= \int_0^1 t \cdot \frac{d\mathbf{s}}{dt} dt \\
 &= \frac{0,559}{\text{via Maple}}
 \end{aligned}$$