

Aalto university

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**Demonstration exercises 3, done during class Thursday 18.3.2021
or Friday 19.3.2021.**

Differential and integral calculus 3, MS-A0311

The solutions will be presented by the assistant during class.

- (1) Calculate

$$\int_{\gamma} x + y \, ds$$

where γ is the part of the circle $x^2 + y^2 = 4$ in the first quadrant from $(2, 0)$ to $(0, 2)$.

- (2) Calculate

$$\int_{\gamma} y \, dx + z \, dy - x \, dz$$

where γ is the straight line from $(0, 0, 0)$ to $(1, 1, 1)$.

- (3) Calculate the circulation of the vector field $F(x, y) = (x - y, x)$ around the unit circle $\gamma(t) = (\cos t, \sin t)$, $0 \leq t \leq 2\pi$.