

10.4.

$$\mathbf{F} = (-y, x, 0)$$

$$\mathbf{F} \cdot d\mathbf{r} = ?$$

γ

a)

$$x = R \cos t \quad dx = -R \sin t dt$$

$$\gamma : y = R \sin t \quad dy = R \cos t dt \quad t: 0 \quad 2\pi$$

$$z = 1 \quad dz = 0$$

$$\mathbf{F} \cdot d\mathbf{r} = (-R \sin t, R \cos t, 0) \cdot (-R \sin t, R \cos t, 0) dt$$

$$\mathbf{F} \cdot d\mathbf{r} = R^2 dt$$

$$\mathbf{F} \cdot d\mathbf{r} = \int_0^{2\pi} R^2 dt = 2\pi R^2$$

γ

$t=0$

b)

$$\gamma : \mathbf{r} = (0,0,1) + t\{(1,1,1) - (0,0,1)\} = (t,t,1) \quad t: 0 \quad 1$$

$$\mathbf{F} \cdot d\mathbf{r} = (-t, t, 0) \cdot (1, 1, 0) dt = 0$$

$$\mathbf{F} \cdot d\mathbf{r} = 0$$

γ

SVAR:

Kurvintegralen är lika med a) $2\pi R^2$ b) 0.