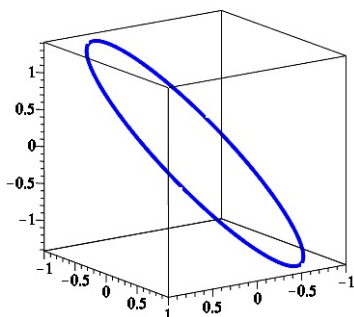


## MATH 223

*Some Hints and Answers for Assignment 34*

## Exercise 43 of Chapter 8.

Sketch the curve  $\gamma$  parameterized by  $g(t) = (\sin t, \cos t, \sin t - \cos t)$ ,  $0 \leq t \leq 2\pi$ . Verify Stokes' Theorem for  $\gamma$  and the vector field  $\mathbf{F}(x, y, z) = (yz, xz, xy)$ .



$\text{curl } \mathbf{F} = (0, 0, 0)$

You should find

$$\mathbf{F}(\mathbf{g}(t)) \cdot \mathbf{g}'(t) = 2 \sin t \cos^2 t + 2 \sin^2 t \cos t - [\sin^3 t + \cos^3 t]$$

Show that each of four terms in the integrand has a definite integral equal to 0.

**Note:** There is a much simpler way to determine the line integral if you observe that  $\mathbf{F}$  is a conservative vector field