

Quiz 4; Wednesday, February 17
MATH 53 with Professor Stankova
Section 116; 3-4
GSI: Eric Hallman

Student name:

You have 10 minutes to complete the quiz. Calculators are not permitted, and remember to show your calculations and explain your reasoning in order to receive full credit.

1. Describe the curve given by the equations $\langle x, y, z \rangle = \langle t \sin t, t, t \cos t \rangle$ on the interval $0 \leq t \leq 8\pi$. Specifically, find a surface that the curve lies on and sketch both the surface and curve.

Squaring all parameters gives $x^2 + z^2 = y^2$, so the curve lies on a cone skewered by the y axis. The curve starts at the origin and spirals four times along the cone (since 8π represents four times around a circle). Since the x parameter is determined by $\sin t$ and the z parameter by $\cos t$, the point moves clockwise (if we are looking at the cone with the point facing us).