MATH 221–02 (Kunkle), Quiz 2 Name: _____

10 pts, 10 minutes Jan. 23, 2017

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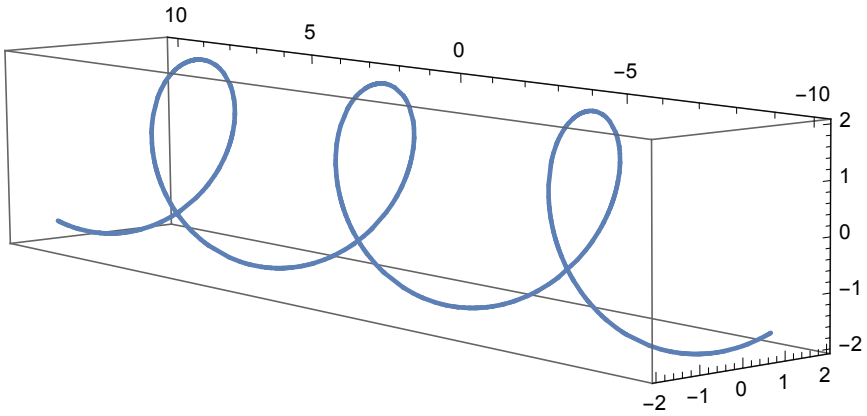
1 (10 pts). Sketch the graph of the vector-valued function $\mathbf{r}(t) = \langle 2\sin t, t, 2\cos t\rangle$. Indicate with an arrow the direction in which the graph is traced by $\mathbf{r}$ as t increases. It might help if you briefly describe the curve you're trying to draw.

Solution: 1.(Source: 13.1.10) As t increases, the x and z coordinates are tracing a circle of radius 2, and the y coordinate is increasing at a constant speed. This describes a helix on the cylinder of radius 2, $x^2 + z^2 = 4$. Here's a nice picture from Mathematica.



As t increases, the curve is traced from left to right (that is, in the positive y direction).