MATH 202 Name: _____

Quiz 3 February 5, 2020

Instructions: Five points total.

1. (1 pt.) Describe carefully, but in your own words, why the definition of arc length on a curve $\mathbf{r}(t)$ from time $t = a$ to $t = b$ is given by the formula below:

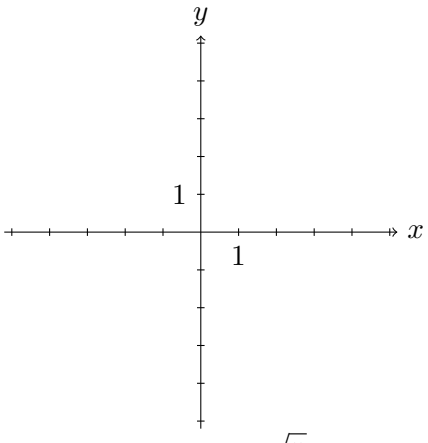
$$L = s = \int_a^b |\mathbf{r}'(t)|dt.$$

2. (4 pts.) Consider the surface defined by

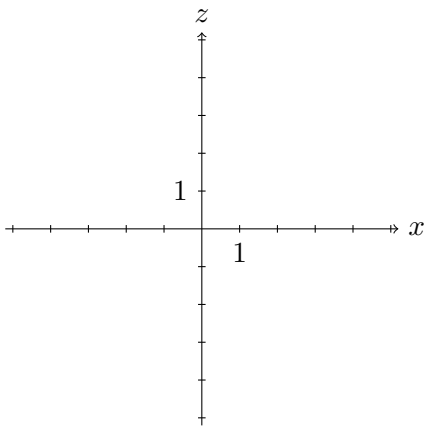
$$4x^2 - y^2 + 2z^2 + 4 = 0.$$

(Hint: Before answering these questions, you should probably convert this equation to standard form. The space below is for scratch work.)

a) Draw the traces requested on the axes below.



trace: $z = 0, \sqrt{\frac{5}{2}}$

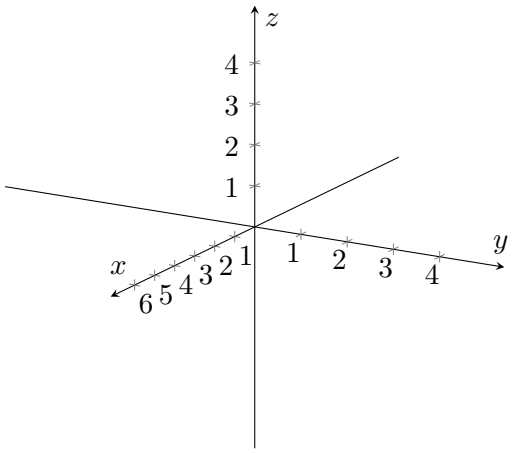


trace: $y = \sqrt{8}$

Part b) is on the next page.

$$4x^2 - y^2 + 2z^2 + 4 = 0.$$

b) Sketch the surface on the axes below. (Give it a name if you can.)



(space for scratch work)