

# Quiz 3 MATH 3503 Fall 2018

Find and classify the  $y$ -traces of the ellipsoid

$$\frac{x^2}{9} + \frac{y^2}{4} + z^2 = 1.$$

Soln: let  $y=k$ , which yields

$$\frac{x^2}{9} + \frac{k^2}{4} + z^2 = 1$$

$$\Rightarrow \frac{x^2}{9} + z^2 = 1 - \frac{k^2}{4}$$

$$\underline{-2 < k < 2}$$

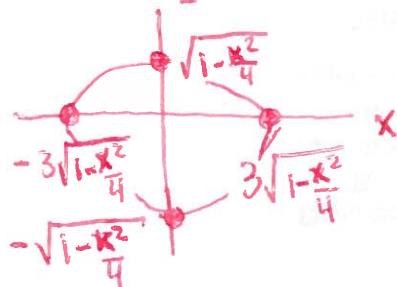
$$1 - \frac{k^2}{4} > 0,$$

so

$$\frac{x^2}{9} + z^2 = 1 - \frac{k^2}{4}$$

is ellipse

$$\frac{x^2}{9(1-\frac{k^2}{4})} + \frac{z^2}{1-\frac{k^2}{4}} = 1$$



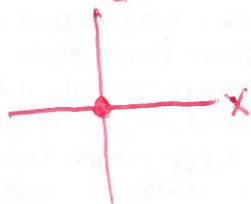
$$\underline{k = \pm 2}$$

yields the eqn

$$\frac{x^2}{9} + z^2 = 0$$



$$x = z = 0$$



$$\underline{k > 2, k < -2}$$

$$1 - \frac{k^2}{4} < 0$$



NO (real)

solution