

Math 206 Section A

Test 2

75 points

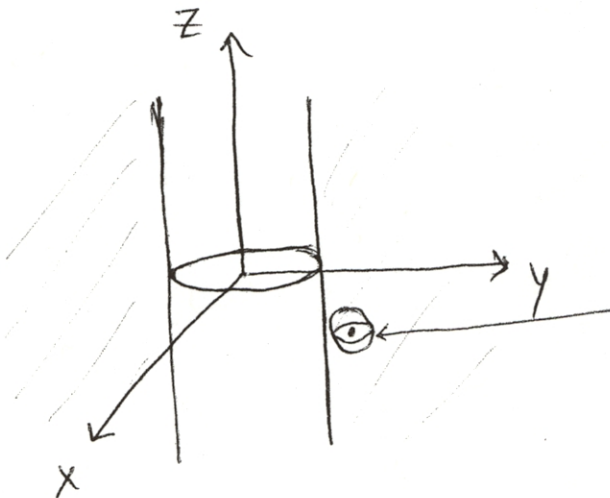
Name: Solutions

Show all your work to receive full credit for a problem.

There are eight questions. Questions are printed on both sides of a page.

1. (8 points) Sketch the following set. Determine if the set is open, closed, or neither. Use the definition of open sets and closed sets to illustrate this with your sketch. Also find the boundary and complement.

$$A = \{(x, y, z) \in \mathbb{R}^3 \mid x^2 + y^2 > 4\}$$



A is the set of points outside the cylinder.

A is open.

A ball around For any point in A, there is a ball around it contained in A.

$$\text{Boundary} = \{(x, y, z) \in \mathbb{R}^3 \mid x^2 + y^2 = 4\}$$

$$\text{Complement} = \{(x, y, z) \in \mathbb{R}^3 \mid x^2 + y^2 \leq 4\}$$