

Name \_\_\_\_\_

## Mathematics 1553

### Quiz 1

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Section E1/Arjun E2/Qianli E3/Kemi E4/Martin E5/Bharat (circle one!)

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1. Give an example of a point in  $\mathbb{R}^4$ .
  
  
  
  
  
  
  
  
  
  
2. Which of the following equations are linear in  $x$ ,  $y$ , and  $z$ ? Select all that apply.

(a)  $x = 0$

(b)  $\pi x - 7y + \sqrt{2}z = e$

(c)  $xyz = 1$

(d)  $x^2 + y^2 + z^2 = 1$

3. Consider the following system of equations:

$$x - y - z = 1$$

$$x + y + z = 5$$

Which of the following are solutions to the system? Select all that apply.

(a)  $(0, 0, 0)$

(b)  $(3, 1, 1)$

(c)  $(5, 2, 2)$

*Turn the page over!*

4. Suppose I have two equations in three variables. Which of the following are possible solutions to the system?

(a) the empty set

(b) a single point

(c) a line

(d) a plane

(e)  $\mathbb{R}^3$

5. Consider the following system of equations:

$$x - y = 0$$

$$x - y = h$$

For which values of  $h$  does this system of equations have a solution?