

Name SOLUTIONS

Mathematics 1553

Quiz 1

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1. Which of the following equations are linear in x , y , and z ? Select all that apply.

(a) $y = |x| + z$

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

(c) $xyz = 1$

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

2. 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) $(1, 0, 0)$

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

(c) $(3, 0, 2)$

3. Suppose we have two equations in three variables. Which of the following are possible solution sets for the system?

(a) a point in \mathbb{R}^2

(b) a line in \mathbb{R}^2

(c) a point in \mathbb{R}^3

(d) a line in \mathbb{R}^3

(e) a plane in \mathbb{R}^3

Turn the page over!

4. Consider the following system of equations:

$$2x - y = 0$$

$$y = 2$$

$$x = h$$

For which values of h is this system consistent? *Hint: you can solve this with row reduction, but you can also solve it by drawing a picture or by other algebraic reasoning.*

Substitute $y=2$ & $x=h$ into $2x-y=0$:

$$2h - 2 = 0$$

$$2h = 2$$

$$\boxed{h = 1}$$