Name _____

Mathematics 1553

Quiz 1

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1. A 21×21 QR code can most naturally be regarded as a point in...

   (a) $\mathbb{R}$

   (b) $\mathbb{R}^2$

   (c) $\mathbb{R}^{21}$

   (d) $\mathbb{R}^{441}$

   (e) none of the above

2. Consider the following system of equations:

$$\begin{aligned} x - y - z &= 1 \\ x + y + z &= 5 \\ y + z &= 2 \end{aligned}$$

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

   (a) $(1, 0, 0)$

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

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

   (d) $(3, 2, 0)$

   (e) none of the above

Turn the page over!

3. Suppose we have one equation in three variables. Which of the following are possible solution sets for the system? Select all that apply.

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

(b) three points in $\mathbb{R}^1$

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

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

(e) all of $\mathbb{R}^1$

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

(a) $z = 0$

(b) $x + y + z = 0$

(c) $\pi x + \sqrt{2}\, y + e^3 z = 0$

(d) $x^{y^z} + y^{z^x} + z^{x^y} = 1$

(e) none of the above