Math 1553 Quiz 1, Fall 2018: Section 2.1   (10 points, 10 minutes)

Solutions

1. (1 point) Consider the equation $x + 2y - z = 1$ for (x, y, z) in $\mathbf{R}^3$.
Does this describe a line or a plane in $\mathbf{R}^3$? (circle one answer)   LINE | PLANE |

2. (1 point) Is the equation $\cos(2)x - 4y - z = 17$ a linear equation in x, y, and z?
Circle your answer: | LINEAR | NOT LINEAR

3. (4 points) Write a system of two linear equations in the variables x and y that has infinitely many solutions.

Solution.
$$x - y = 2$$
$$2x - 2y = 4.$$
The solutions are all points on the line $x - y = 2$.

4. (4 points) Write a consistent system of three linear equations in the variables x and y.

Solution.
$$x + y = 3$$
$$2x - 3y = 11$$
$$2x + 2y = 6.$$
The third equation is redundant, since it defines the same line as the first equation. This system is consistent, with solution $x = 4$, $y = -1$.