Name:_____   Recitation Section:_____

Math 1553 Quiz: Lines and planes in $\mathbf{R}^n$ and §1.1 (8 points, 10 minutes)

Solutions

Show your work and justify answers where appropriate. If you write the correct answer without sufficient work or justification, you will receive little or no credit.

1. (1 point) Give an example of a point in $\mathbf{R}^4$.

Solution.
Many answers possible. For example, $(1, 2, 3, 4)$ is such a point.

2. (2 points) Give an example of an *inconsistent* system of two linear equations in two variables x and y. (you do not need to show it is inconsistent)

Solution.
Many answers possible. For example,
$$x + y = 0$$
$$x + y = 1.$$
Something like $0 = 5$ is also acceptable for an equation, since it is $0x + 0y = 5$.

3. (1 point each) For each of the following, circle true or false. There is no partial credit, and no justification is required.

a) The equation $2x^2 - 3y = 1$ is a linear equation in the variables x and y.
　　TRUE　　FALSE

b) If a system of linear equations has more than one solution, then it must have infinitely many solutions.
　　TRUE　　FALSE

Solution.

a) False. The "x^2" makes it non-linear.

b) True. We emphasized this fact in lecture, and it was in our first worksheet.

4. (3 points) Find the value of h that will make the system of equations consistent.
$$-x + 3y = 5$$
$$2x - 6y = h$$

Solution.

If we add twice the first equation to the second equation, we get $0x + 0y = h + 10$, so $0 = h + 10$, hence $h = -10$.
(this makes the first and second equations describe identical lines)