Math 2030, Matrix Theory and Linear Algebra I, Winter 2014

Homework 2
Due: Wednesday, January 22, 2014

Part I: True or false questions

Decide whether each statement is true or false. If it is false, give a reason.

1. A plane in $\mathbb{R}^3$ is completely determined by a point in the plane and any non-zero vector orthogonal to the plane.
2. Three different planes in $\mathbb{R}^3$ intersect in a point, or not at all.
3. The following system of linear equations has an infinite number of solutions:
$$\begin{aligned} -2x + y - \tfrac{3}{2}z &= 8 \\ 4x - 2y + 3z &= 17 \end{aligned}$$
4. $3x + 4y = 5$ represents a line in $\mathbb{R}^3$.
5. A line in $\mathbb{R}^3$ is completely determined by a point on the line and any vector perpendicular to it.

Part II: Book questions

Do the following questions from the textbook:

- 1.3 #8, 22, 28, 44;
- 2.1 #22.