

Assignment 3 (9/29)

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This homework is due at the beginning of class on Friday 10/6. You may cite results from class as appropriate. Unless otherwise stated, you must provide a complete explanation for your solutions, not simply an answer. You are encouraged to work together on these problems, but you must write up your solutions independently.

You are encouraged to think about the problems marked with a () if you have time, but you don't need to hand them in.*

Remember that you can always use the result of the previous assignment problems without proof to solve the new assignment problems.

Problem 0★

Over the first week we will be covering section 1 – 5 from chapter 12. Try to read the corresponding sections from book everyday after class.

Problem 1

Problems 12.3.(54, 64).

Problem 2

The form

$$\langle x - x_1, y - y_1, z - z_1 \rangle = \lambda \vec{v}$$

is called the parametric equation. It can be also rewritten in the form

$$x = x_1 + \lambda a, y = y_1 + \lambda b, z = z_1 + \lambda c$$

where $\vec{v} = \langle a, b, c \rangle$. Written more compactly, with $\vec{r} = \langle x, y, z \rangle$ and $\vec{r}_1 = \langle x_1, y_1, z_1 \rangle$, we get the vector equation of a line

$$\vec{r} - \vec{r}_1 = \lambda \vec{v}$$

(look up page 864 from the book).

Similarly, we can also get the vector and scalar equation of a plane as we discussed in class (page 867 from the book).

Problems 12.5.(2, 4, 5, 9, 24, 28, 30, 36, 63, 75★).