Quiz 2 Math 2202

Guidelines

- This quiz[1] is for you to test yourself on what we've been studying recently.
- You have 10 minutes. As a section, we will go over the quiz (or part of it). Solutions will be posted online as well.

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1. Let L be the line passing through the point $(3, 1, -1)$ and parallel to the vector $\langle 4, -3, 1\rangle$.

   For each vector, decide if it is parallel to the line L.

   If not, imagine the vector anchored at the point $(3, 1, -1)$ and determine the angle between the vector and the line L, and whether it is acute ($< \pi/2$), obtuse $> \pi/2$ or neither. (You can leave the angle value in terms of inverse sine or cosine.)

   (a) $\langle 3, 2, -6\rangle$

   (b) $\langle 3, 2, 6\rangle$

   (c) $\langle -8, 6, -2\rangle$

Continued on next page.

[1] Why? While there is much we don't know about how we learn, researchers in cognitive science have identified some principles that support learning of certain things. One such principle is frequent testing, also known as *retrieval practice*. Testing out your brain to see what you can remember without the aid of notes or other people and then getting corrective feedback can actually help you remember more of what you're trying to learn. For more, see for example `https://en.wikipedia.org/wiki/Testing_effect` and the book *Make It Stick* by Brown, Roediger III and McDaniel.

2. Find a vector equation for the line L, the line passing through the point $(3, 1, -1)$ and parallel to the vector $\langle 4, -3, 1\rangle$. Then write parametric equations for this line.

3. Write an equation for the plane $\mathcal{P}$ parallel to the xz-plane and containing the point $(0, -3, 0)$. Sketch this plane.

4. (Extra) Does L intersect the plane $\mathcal{P}$ in #3? If so, where? If not, why not?