QUIZ 3 - MATH 251 Friday, January 29

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Consider the points $A = (1, 4, 1), B = (-2, 2, 0), P = (2, 5, 7)$ and $Q = (-3, 2, 1)$. Determine whether the vectors $\overrightarrow{AB}$ and $\overrightarrow{PQ}$ are equivalent vectors.

2. Write the vector $\boldsymbol{u} = \langle -6, 24, -9 \rangle$ as a linear combination of the vectors $\boldsymbol{v} = \langle 0, 4, 2 \rangle$ and $\boldsymbol{w} = \langle 2, 0, 7 \rangle$.

3. Write parametric equations for the line passing through the points $P = (-3, 1, 9)$ and $Q = (4, 3, 7)$.

4. Determine whether the lines $\boldsymbol{r}_1(t) = \langle 0, 1, 1\rangle + t\langle 1, 1, 2\rangle$ and $\boldsymbol{r}_2(s) = \langle 2, 0, 3\rangle + s\langle 1, 4, 4\rangle$ intersect and, if so, find their point of intersection.