Quiz 3 Solution

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I will post solutions to Quiz 4 on the 4th; they are handwritten with a picture.

Find the intersection between the lines.

\[ r(t) = (-3, 4, 2) + (4, -2, 1) t \]

\[ s(u) = (-2, 11, 14) + (-1, 3, 5) u \]

If \( r(t) = s(u) \), we will have the three equations

\[ -3 + 4t = -2 - u \]

\[ 4 - 2t = 11 + 3u \]

\[ 2 + t = 14 + 5u \]

Solve two of them for \( t, u \) then plug in and see if the third one holds.

\[ -3 + 4t = -2 - u \] (first equation)

\[ 8 - 4t = 22 + 6u \] (second equation times two)

\[ 5 = 20 + 5u \] (add)

so \( u = -3 \)

\[ -3 + 4t = -2 - (-3) = 1 \) so \( t = 1 \)

Unfortunately, plugging \( t = 1 \) and \( u = -3 \) into the third equation gives

\[ 2 + 1 = 3 \neq -1 = 14 + 5(-3) \]

so there is no point of intersection. I was intending that there be one: there was either an error in my scratch work or I copied wrong. But the class demonstrated understanding of how to approach the problem, which is good.