1.5 #14 The set of vectors of the form $\begin{bmatrix} 3x_4 \\ 8+x_4 \\ 2-5x_4 \\ x_4 \end{bmatrix}$ with x_4 free

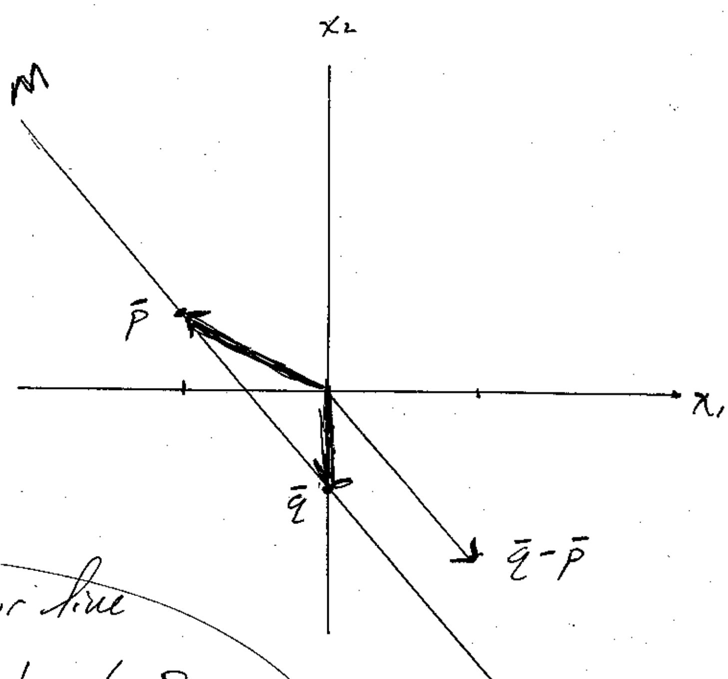
can also be represented in parametric vector form

by $\bar{v} = t\begin{bmatrix} 3 \\ 1 \\ -5 \\ 1 \end{bmatrix} + \begin{bmatrix} 0 \\ 8 \\ 2 \\ 0 \end{bmatrix}$, for $t \in \mathbb{R}$.

That set is a line through $\begin{bmatrix} 0 \\ 8 \\ 2 \\ 0 \end{bmatrix}$ parallel

to the line through $\begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$ and $\begin{bmatrix} 3 \\ 1 \\ -5 \\ 1 \end{bmatrix}$.

1.5 #22 In this case we want to describe the line through $\bar{p} = \begin{bmatrix} -6 \\ 3 \end{bmatrix}$ and $\bar{q} = \begin{bmatrix} 0 \\ -4 \end{bmatrix}$.



Let's call our line M.
We can calculate the slope of our line by considering $\bar{q}-\bar{p}$ (or $\bar{p}-\bar{q}$).

$\bar{q}-\bar{p} = \begin{bmatrix} 6 \\ -7 \end{bmatrix}$. So, the slope of M is $\frac{-7}{6}$.

A parametric equation for our line becomes $\bar{x} = \begin{bmatrix} -6 \\ 3 \end{bmatrix} + t\begin{bmatrix} 6 \\ -7 \end{bmatrix}$ where $t \in \mathbb{R}$.

This line is parallel to the line through the origin and $\begin{bmatrix} 6 \\ -7 \end{bmatrix}$. That is the line defined by $\bar{x} = t\begin{bmatrix} 6 \\ -7 \end{bmatrix}$ for $t \in \mathbb{R}$.