## 2023-02-22

Construct $v$ in $H=I-2 v v^{T}$ with $\|v\|_{2}=1$ such that

$$
H x=r e_{1}, \quad x=\left[\begin{array}{l}
3 \\
4
\end{array}\right] .
$$

What is $v$ ? What is $r$ ?

