

Let's compute!

$$T : \begin{cases} T(i) = 1i + 2j + 3k \\ T(j) = 1i + 1j + 4k \\ T(k) = 0i + 1j + 0k \end{cases}$$

$$M = \begin{bmatrix} 1 & 1 & 0 \\ 2 & 1 & 1 \\ 3 & 4 & 0 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 1 & 0 \\ 2 & 1 & 1 \\ 3 & 4 & 0 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 1a + 1b + 0c \\ 2a + 1b + 1c \\ 3a + 4b + 0c \end{bmatrix}$$

Cool! What else can I do?

Identity map!

Zero map!

Inverse of a map?