# Oct 26 notes

Activity 3.2.2.

Our answer is A $\begin{matrix}6\\3\end{matrix}$ because we can multiply $\begin{matrix}1\\0\\0\end{matrix}$

For 3.2.3 you'd basically add $\begin{matrix}2\\1\end{matrix}$ and $\begin{matrix}-3\\2\end{matrix}$ and we'd get C $\begin{matrix}-1\\3\end{matrix}$

For 3.2.4 we'd basically multiply $\begin{matrix}1\\0\\0\end{matrix}$ transformation by -2 and $\begin{matrix}0\\0\\1\end{matrix}$ transformation by -3 and then add them together to get C $\begin{matrix}-4\\-2\end{matrix}$ and $\begin{matrix}9\\-6\end{matrix}$ so $\begin{matrix}5\\-8\end{matrix}$

For 3.2.5 - any of them bc you can get the middle value of T thru linear combination, we'll be able to span the set of all vectors of T, if you take the RREF you'd see thats true – with B they are a basis.

Fact 3.2.6 – Consider any basis for V – since every vector can be written as a linear combo of the basis vectors, we may compute T(v) as follows:

Therefore, any linear transformation of T:V W can be dfined by describing the values of T($b_i$)

So just describing the transformation in terms how it effects the basis vectors will completely determine the transformation.

Definition 3.2.7

A linear transformation is determined by its action on the standard basis... so its convenient to store this info in an m x n matrix, callled the standard matrix of T

Activity 3.2.8

the e1 implies that its always top left, first pivot.. so, just like what we did in def 3.2.7, you'd combine those 4 vectors in a matrix and then we'd get the standard basis.

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