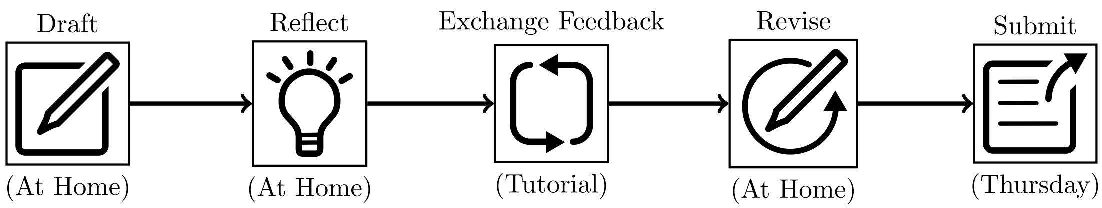
MAT224 **Due: Week 6 Tutorial (draft), February 15 (final)**
PAR 4 **Name:**____________________________

The PAR Process



A linear transformation $\mathcal{P}:\mathcal{V}\to\mathcal{V}$ is called a *projection* if $\mathcal{P}\circ\mathcal{P}=\mathcal{P}$ (you might be familar with *orthogonal projections* which further require $\vec{v}-\mathcal{P}\vec{v}$ to be orthogonal to $\mathcal{P}\vec{v}$).

Let $\mathcal{T}:\mathcal{V}\to\mathcal{V}$ be a linear transformation and let $\mathcal{V}'\subseteq\mathcal{V}$ be a subspace. The *restriction* of $\mathcal{T}$ to $\mathcal{V}'$, written $\mathcal{T}\Big|_{\mathcal{V}'}$, is the linear transformation

$$\mathcal{T}\Big|_{\mathcal{V}'}:\mathcal{V}'\to\mathcal{V}$$

so that $\mathcal{T}\Big|_{\mathcal{V}'}(\vec{v})=\mathcal{T}(\vec{v})$ for all $\vec{v}\in\mathcal{V}'$ (and which is undefined for $\vec{v}\notin\mathcal{V}'$).

Problem Statement

Let $\mathcal{P}:\mathcal{V}\to\mathcal{V}$ be a projection. Show that $\mathcal{P}\Big|_{\mathrm{range}(\mathcal{P})}$ is the identity map on range($\mathcal{P}$).

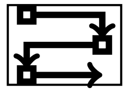
Hint: if you find yourself using cumbersome notation over and over again, name some new variables to aid your exposition.

Reflection

Turn the page and check off the icons for things you think you did well; circle the icons for things you would like feedback on.

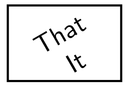
Feedback Provided By:____________________________

Suggestions	Communication	**Strengths**

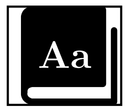


Show All Steps

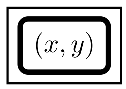
Explain Why,
Not Just What



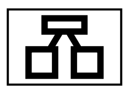
Avoid Pronouns



Use Correct
Definitions

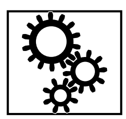


Define Variables,
Units, etc.

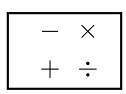


Create Diagrams

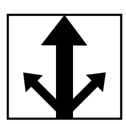
Suggestions	Accuracy	**Strengths**



Correct Setup

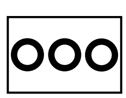


Accurate Calculations



Solve Multiple Ways

Answer Reasonable



Other
(Write Below)