\begin{align*}
T(x) &= P(T(x)) = P'(T(V)) \\
\text{Case 2:} & P'(T(V)) = \frac{P(V)}{\text{BC}} \\
\text{BC:} & \text{M}_B \cdot \text{P}(V) \\
& \text{M}_T \cdot \text{P}(T(V)) \\
\text{BC (P(V))} & \text{M}_T \\
\text{M}_B (P(V)) & \text{P}(T(V)) \\
\text{Problem Session} & \text{Problem Session} \\
\text{Fri.} & \text{Thu.} \\
\text{MR (CB)} & \text{MR (CB)} \\
\text{Thu.} & \text{Exam} \LT \\
\text{Well} & \text{Exam} \\
\text{R} & \text{R} \\
\text{Well} & \text{Exams}
\end{align*}
Diagram KRI
\[ T: \mathbb{M}_{22} \to \mathbb{P}_2 \]

\[ T \left( \begin{bmatrix} a & b \\ c & d \end{bmatrix} \right) = (2a + b + 3c - 2d) x + (a + b + c) x^2 \]

\[ C = \left\{ \begin{bmatrix} 1 & -2 \\ 1 & -1 \end{bmatrix}, \begin{bmatrix} 2 & -3 \\ 3 & 0 \end{bmatrix}, \begin{bmatrix} -3 & 0 \\ 1 & 2 \end{bmatrix}, \begin{bmatrix} 2 & -2 \\ 4 & 3 \end{bmatrix} \right\} \]

\[ E = \left\{ 1, x, 1 + x + x^2 \right\} \]

\[ M_{C, E}^T ? \]

\[ p_E(T(\begin{bmatrix} 1 & -2 \\ 1 & -1 \end{bmatrix})) = p_E(5 + 10x + 0x^2) = 5(1) + 10(1)x + 0(1 + x + x^2) = \begin{bmatrix} -5 \\ 10 \\ 0 \end{bmatrix} \]

\[ p_E(T(\begin{bmatrix} 2 & -3 \\ 3 & 0 \end{bmatrix})) = \begin{bmatrix} -12 \\ 20 \\ 2 \end{bmatrix} \]

\[ p_E(T(\begin{bmatrix} -3 & 0 \\ 1 & 2 \end{bmatrix})) = \begin{bmatrix} 5 \\ 12 \\ -1 \end{bmatrix} \]

\[ p_E(T(\begin{bmatrix} 2 & -2 \\ 4 & 3 \end{bmatrix})) = \begin{bmatrix} -12 \\ 16 \\ -4 \end{bmatrix} \]

\[ M_{C, E}^T = \begin{bmatrix} -5 & -12 & -5 & -12 \\ 10 & 20 & 12 & 16 \\ 0 & 2 & -1 & 4 \end{bmatrix} \]

3 \times 4
\[ T\left( \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \right) = 5 + 16x + 6x^2 \]