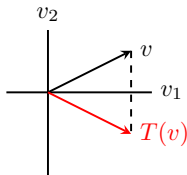


Examples in Polynomial Space

Ex E:

$$T(v) = T\left(\begin{bmatrix} v_1 \\ v_2 \end{bmatrix}\right) = \begin{bmatrix} v_1 \\ -v_2 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix} v$$

A **reflection** through the v_1 axis



Ex Diff: $V = P_3$, $W = P_2$ and

$$T(v(t)) = T(\underbrace{a_0 + a_1t + a_2t^2 + a_3t^3}_{\text{generic member of } P_3}) = \underbrace{a_1 + 2a_2t + 3a_3t^2}_{\text{in } P_2}$$

This is just differentiation of polynomials and you learned in calculus that differentiation is linear! (the derivative of a sum is the sum of the derivatives, etc.)