

$$\begin{array}{ccc} \{v_j\}_{j=1}^n = \mathfrak{V} \subseteq \mathcal{V} & \xrightarrow{T(\cdot)} & \mathcal{W} \supseteq \mathfrak{W} = \{w_j\}_{j=1}^m \\ \Downarrow & & \Downarrow \\ \Psi & & \Psi \end{array}$$

$$\begin{array}{ccccccc} VT^{-1}W^{-1}w = & v^j v_j = & \mathbf{v} & \begin{array}{c} \xleftarrow{T^{-1}(\cdot)} \\ \xrightarrow{T(\cdot)} \end{array} & \mathbf{w} = w^j w_j = & W[\mathbf{w}]_W = T(\mathbf{v}) = T(V)[\mathbf{v}]_V & \\ & \downarrow V^{-1} \uparrow V & & & \downarrow W^{-1} \uparrow W & & = WTV^{-1}v \\ & & \text{curved arrow } T^{-1} & & & & \\ V^{-1}v = [\mathbf{v}]_V & \xleftarrow{T^{-1}} & [\mathbf{w}]_W & \xrightarrow{T} & W^{-1}w = [T(\mathbf{v})]_W = T[\mathbf{v}]_V & & \\ \Downarrow & & \Downarrow & & \searrow & & \downarrow \\ \mathbb{F}^n & \xrightarrow{T} & \mathbb{F}^m & & T = [T(V)]_W & & \\ \Downarrow & & \Downarrow & & & & \end{array}$$

$$t_j = [T(v_j)]_W$$

$$\{\mathbb{R}^n, \mathbb{C}^m, \dots\} \quad \{\mathbb{R}^m, \mathbb{C}^m, \dots\}$$