b) Recall:

From Q9, suppose $v_1, \dots, v_n$ is basis of V, and $\varphi_1, \dots, \varphi_n$ is dual basis, then for any $\psi \in V'$,

$$\psi = \psi(v_1)\varphi_1 + \dots + \psi(v_n)\varphi_n$$

Analogously, e_1, e_2, e_3 is a basis of $\mathbb{R}^3$, and ψ_1, ψ_2, ψ_3 is the dual basis. Then for $T'(\varphi_1), T'(\varphi_2) \in (\mathbb{R}^3)'$, $(T': \mathbb{R}^{2'} \to \mathbb{R}^{3'})$

$$T'(\varphi_1) = T'(\varphi_1)(e_1)\psi_1 + T'(\varphi_1)(e_2)\psi_2 + T'(\varphi_1)(e_3)\psi_3 \quad -(1)$$

$$T'(\varphi_2) = T'(\varphi_2)(e_1)\psi_1 + T'(\varphi_2)(e_2)\psi_2 + T'(\varphi_2)(e_3)\psi_3 \quad -(2)$$