> Answer the questions below. You may answer in the space provided. You may use the back or a separate sheet of paper if you need more space. You are to work in groups of no more than four people. Make sure to enter the names of your groupmates below.

Name: _____

Section: _____

Group Members: _____

1. (6 points) Consider the bases of $\mathcal{P}_2$: $B = \{x, 1 + x^2, x + x^2\}$ and $C = \{1, 1 + x, x^2\}$. Find the change of basis matrices $P_{C \leftarrow B}$ and $P_{B \leftarrow C}$. You may assume without proof that B and C are bases of $\mathcal{P}_2$.

2. (6 points) Let $L : V \mapsto W$ be invertible, where V and W are vector spaces over the same scalar field. Prove that L^{-1} is bijective.

3. (8 points) Let V be a real vector space such that $\dim V = n$. Let B be a basis of V. Prove that $L : V \mapsto \mathbb{R}^n$ where $L(x) = [x]_B$ is a bijective linear transformation.