Week 6 Linear Algebra worksheet
MATH1014

(1) Let $\mathcal{B} = \{1 + t, 2 - t\}$ and $\mathcal{C} = \{1 - t, t\}$ be two bases for $\mathbb{P}_2$.
  (a) Express $2t + 2$ in $\mathcal{B}$ and $\mathcal{C}$ coordinates.
  (b) Is it easier to express the $\mathcal{B}$ basis vectors in $\mathcal{C}$ coordinates, or the $\mathcal{C}$ basis vectors in $\mathcal{B}$? If you want to find the change of coordinate matrices, why is it useful to answer this question before you begin computing anything?
  (c) Find the change of coordinate matrices from $\mathcal{B}$ to $\mathcal{C}$ coordinates and from $\mathcal{C}$ basis vectors in $\mathcal{B}$ coordinates.