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21 February 2023
Due Thursdaye 23 February 2023

Linear Algebra, Math 2101-002
Homework set #7

1. Let $S, T \subset V$ be two subspaces of the vector space V.
(a) Prove that their intersection $S \cap T = \{x \in V | x \in S \text{ and } x \in T\}$ is a subspace.
(b) Show an example which illustrates that their union $S \cup T = \{x \in V | x \in S \text{ or } x \in T\}$ is not always a subspace.

3. Show that $p_1(x) = 1 + x$, $p_2(x) = 1 - x$, $p_3(x) = (1 + x)(1 - x)$, span the space Π_2, the space of polynomials of degree less than or equal to two.