

Math 121A – Homework 2

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Wednesday, April 10, 2019

Reading: Sections 1.3, 1.4, 1.5. You can ignore Example 1 in section 1.4. Also, feel free to use row-reduction (Math 3A) to solve the systems in 1.4 and 1.5

- **Section 1.3:** 1, 10, 17, 19, 20 (do this by induction on n), (Optional: 25, see def above 23)
- **Section 1.4:** 1, 5(a)(e)(g), 10, 13, 15
- **Section 1.5:** 1, 2(a)(c)(e), 9, 10, 12, 14, (Optional: 20)

Hint for 1.3.19: For the ‘only if’ direction, suppose $W_1 \cup W_2$ is a subspace and $W_1 \not\subseteq W_2$, that is, there exists $w_1 \in W_1$ such that $w_1 \notin W_2$. Show $W_2 \subseteq W_1$, that is, assume that w_2 is an arbitrary element in W_2 , and show $w_2 \in W_1$. To do this, consider $x = w_1 + w_2$ and argue in cases.