

UH - Math 4377/6308 - Dr. Heier - Fall 2010
HW 6
Due 10/06, at the beginning of class.

Use regular sheets of paper, stapled together.
Don't forget to write your name on page 1.

1. (1 point) Section 2.2, Problem 1 (Just say true or false, no further explanation necessary.)
2. (1 point) Section 2.2, Problem 3
3. (1 point) Section 2.2, Problem 5(a)
4. (1 point) Let $T_1 : \mathbb{R}^2 \rightarrow \mathbb{R}^2$, $T_1(a_1, a_2) = (a_1 + a_2, a_1 - a_2)$. Let $\beta = \{(1, 0), (0, 1)\}$ and $\gamma = \{(1, 2), (1, 1)\}$. Compute $[T]_{\beta}^{\gamma}$.
5. (1 point) Let $T_2 : \mathbb{R}^2 \rightarrow \mathbb{R}^2$, $T_2(a_1, a_2) = (2a_1 + 4a_2, -a_1 - a_2)$. Let $\beta = \{(1, 2), (-1, 1)\}$ and $\gamma = \{(2, 1), (2, 0)\}$. Compute $[T]_{\beta}^{\gamma}$.
6. (1 point) Section 2.2, Problem 10
7. (1 point) Section 2.2, Problem 13
8. (1 point) Section 2.2, Problem 15
9. (1 point) Section 2.3, Problem 1
10. (1 point) Let T_1, T_2 be as above. Let $\alpha = \{(1, 1), (0, 1)\}$, $\beta = \{(1, 2), (-1, 1)\}$, $\gamma = \{(0, 1), (2, 1)\}$. Verify explicitly that $[T_2 \circ T_1]_{\alpha}^{\gamma} = [T_2]_{\beta}^{\gamma} [T_1]_{\alpha}^{\beta}$. (This is of course assured by Theorem 2.11.)
11. (1 extra credit point) Section 2.2, Problem 16