Worksheet
2/21/2020

Name: _____

1. Let V be an inner product vector space. Let u and v be perpendicular vectors in V. Prove the Pythagorean identity:
$$\|u+v\|^2 = \|u\|^2 + \|v\|^2$$

see Lecture 19.

2. On $\mathbb{R}^2$, define an operator $\|\cdot\|$ as $\|x\| = |x_1| + 2|x_2|$ where $x = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$. Show that $\|\cdot\|$ is a norm on $\mathbb{R}^2$.

See Lecture 19.