WORKSHEET 10/26/22
MATH 2331, FALL 2022

(1) Show that $|\vec{x} - \vec{y}|^2 = |\vec{x}|^2 + |\vec{y}|^2$ if $\vec{x}$ and $\vec{y}$ are orthogonal. Does this remind you of anything?

(2) Let A be an $m \times n$ matrix, $\vec{b}$ a vector in $\mathbb{R}^n$, and $V = \text{im}(A)$. Is the system $A\vec{x} = \text{proj}_V(\vec{b})$ consistent?

(3) Knowing nothing else, should you expect points (x_1, y_1), (x_2, y_2), and (x_3, y_3) to lie on a line?

(4) Do the points $(1, 1)$, $(2, 3)$, and $(3, 4)$ lie on a line?