GEOMETRY | Homework 0427 | Name:
DR. PAUL L. BAILEY | April 27, 2021

Due tomorrow, Wednesday, April 28, 2021.

Problem 1. Consider the vectors $\vec{v} = \langle 2, 7 \rangle$ and $\vec{w} = \langle 5, -3 \rangle$.
Let R be translation by $\vec{v}$, and let S be translation by $\vec{w}$.
Compute the following.

(a) $\vec{v} + \vec{w}$

(b) $3\vec{v} - 2\vec{w}$

(c) $R(5, 2)$

(d) $S(3, -5)$

(e) $R(S(8, 8))$

(f) $R(S(x, y))$

Problem 2. Let $T(x, y) = (x - 3, y + 1)$. Let $R(x, y) = (8 - y, x + 2)$.
Compute the following.

(a) What is $T(6, 11)$?

(b) What is $R(1, 9)$?

(c) What is $R(T(9, 2))$?

(d) What is $R(R(5, 7))$?

(e) What is $R(T(x, y))$?

(f) What is $T(R(x, y))$?

(g) Transformation T is a translation.
What is the vector of translation?

(h) Transformation R is a rotation by $90°$.
What is the center of the rotation?

Problem 3. Let R be rotation by 180° about $(3, 0)$. Let S be rotation by 180° about $(7, 0)$.

(a) Find a formula for R.

(b) Find a formula for S.

(c) Find a formula for $R \circ S$.

(d) $R \circ S$ is a translation. Find its vector of translation.