Math 20C – Swanson – Fall 2019
Homework 2
Due Monday, 10/14/19 at 11:59pm

- The graded part of the homework is on WebAssign.
- The problems below are also assigned and you are responsible for doing them, but they will not be collected or graded.

1. Consider $\vec{a} = 2\hat{\imath}$ and $\vec{b} = -\hat{\imath} + 3\hat{k}$.

   (a) Use the dot product to find the angle (in degrees) between $\vec{a}$ and $\vec{b}$.

   (b) Use the cross product to find the angle (in degrees) between $\vec{a}$ and $\vec{b}$.

   (c) Are there any complications in either method?

2. Compute the point closest to $R = (8, 7)$ on the line through $P = (5, 1)$ and $Q = (9, 4)$.

3. Determine whether the following vectors point into the page (away from you) or out of the page (towards you). Vectors $\vec{v}$ and $\vec{w}$ are shown below.

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

   (b) $\vec{w} \times \vec{v}$

   (c) $(3\vec{w} - 2\vec{v}) \times (\vec{v} - 4\vec{w})$