CMSC 425 – Fall 2018

Homework 1 - Solution Template

**Instructions**: You can either type your answers in to the text boxes provided or print this document (single sided) and handwrite your answers into the spaces provided. If you type in your answers, please save it as a .doc, .docx. or .pdf file and submit it through ELMS. If you write your answers, please scan your document (ideally using a good-quality scanner or using your phone and an image enhancing app such as [CamScanner](https://www.camscanner.com/)).

If your answer does not fit in the space provided, please leave a message as to where to find it. If you type your answers in, please do not change the layout on the page, because our grading software uses the exact position on the page to locate answers.

**Name:**

**Student ID:**

**Problem 1:**

1. Angle between vectors u and v in degrees
2. Unit vector w that is perpendicular to both u and v
3. Point c that lies f units behind and h units above p moving in direction u
4. 3×3 matrix (assuming homogeneous coordinates) for rotating the minute hand of a watch through 5 minutes. Clock is centered at the origin
5. Same as (iv) but clock is centered at c = (cx, cy)

**Problem 2:** Mesh refinement

*abc* ←

*acc* ←

*aac* ←

*bcc* ←

*bbc* ←

*abb* ←

*aab* ←

**Problem 3:** Projectile shooting

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**Challenge problem:** Disk collision

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**Scratch Work**

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