

CPSC 314
Theory Assignment 1

Due Wed, Sept 25 at 23:59

Submit your answers on the corresponding assignment on canvas

1 - (54 points) Given the following vectors

$$a = (7, 4, -12)$$

$$b = (5, -3, 8)$$

$$c = (14, 7, 2)$$

- a) compute $a \times b$
- b) compute $a \cdot b$
- c) compute $a \wedge c$
- d) compute the angle between a and b
- e) compute the magnitude of c
- f) compute a position at 32% of the distance from a to b
- g) compute a position at 71% of the distance from c to a

2 - (31 points) Given the following matrices

$$A = \begin{bmatrix} 11 & 4 & 3 \\ 2 & 9 & 2 \\ 5 & -2 & 3 \end{bmatrix}$$

$$B = \begin{bmatrix} 2 & -3 & 6 \\ 1 & 3 & 8 \\ 9 & 7 & 5 \end{bmatrix}$$

- a) compute $C = AB$
- b) compute $D = BA$
- c) Given the vector a from the previous question, compute Ba
- d) Given the vector b from the previous question, compute Db

3 - (15 points) Given the triangle $\triangle abc$

- a) compute the triangle's normal
- b) compute the triangle's area