# **CS128 Assignment 1: Rigid Body Motion - Answers**

## Part 1: Matrix and Vector Operations

#### 1. Matrix Addition:

A + B =

[ [11, 22, 33],

[44, 55, 66],

[77, 88, 99]]

### 2. Matrix Multiplication:

$$A (3x2) * B (2x4) =$$

[[110, 140, 170, 200],

[230, 300, 370, 440],

[350, 460, 570, 680]]

## 3. Matrix Transpose:

Transpose of A (3x2):

[[1, 3, 5],

[2, 4, 6]]

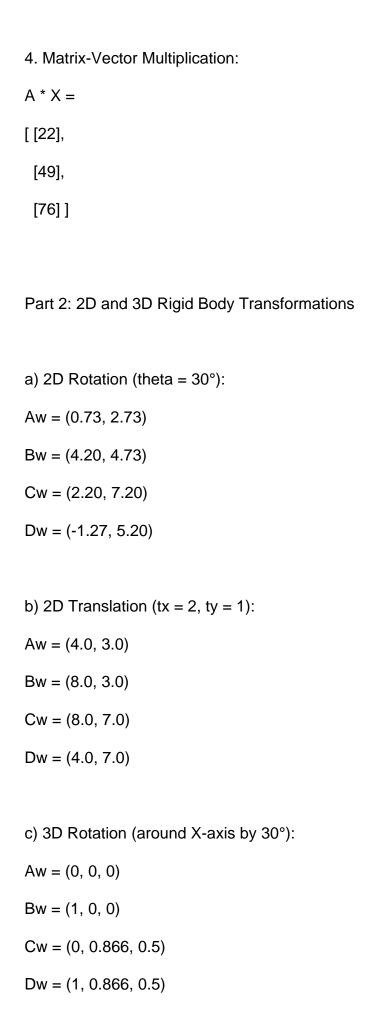
## Transpose of B (2x4):

[[10, 50],

[20, 60],

[30, 70],

[40, 80]]



Ew = (0, -0.5, 0.866)

Fw = (1, -0.5, 0.866)

Gw = (0, 0.366, 1.366)

Hw = (1, 0.366, 1.366)

d) 3D Translation (tx = 2, ty = 2, tz = 2):

Aw = (2, 2, 2)

Bw = (3, 2, 2)

Cw = (2, 3, 2)

Dw = (3, 3, 2)

Ew = (2, 2, 3)

Fw = (3, 2, 3)

Gw = (2, 3, 3)

Hw = (3, 3, 3)