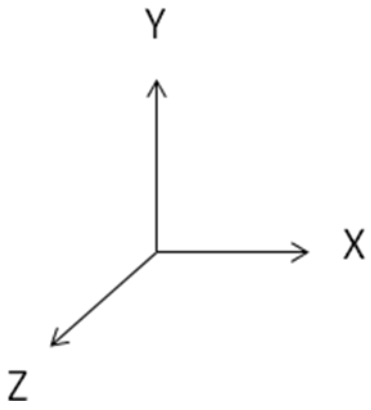
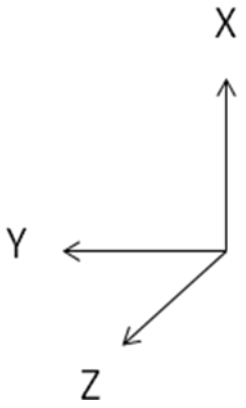
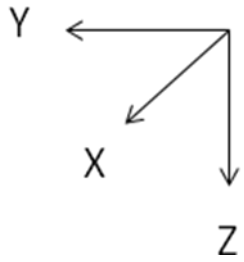
Robotics
Exam II: Mobile Robots
100 Exam points → 15% overall

Name: _____

#1 (20 points) Explain the concept Monte Carlo Localization.

#2 (20 points) Explain what SLAM is in terms of mobile robots.

#3 (20 points): In kinematics one needs to be able to describe the relationship between the different coordinate system frames. For this question, assume we are only dealing with rotations (i.e. all coordinate system frames have the same origin). Given the following 3 coordinate system frames, describe in a 3x3 matrix, the relationship between frame 2 and frame 0 (i.e. the transformation that will translate points from frame 2 to 0).

Frame 0	Frame 1	Frame 2
		

#4 (20 points): Explain what Denavit-Hartenberg (DH) parameters are and how they are used in Forward Kinematics.

#5 (20 points): Explain the concept of Inverse Kinematics and what is difficult about it.