

Assignment #1

CSC376 Fall 2020

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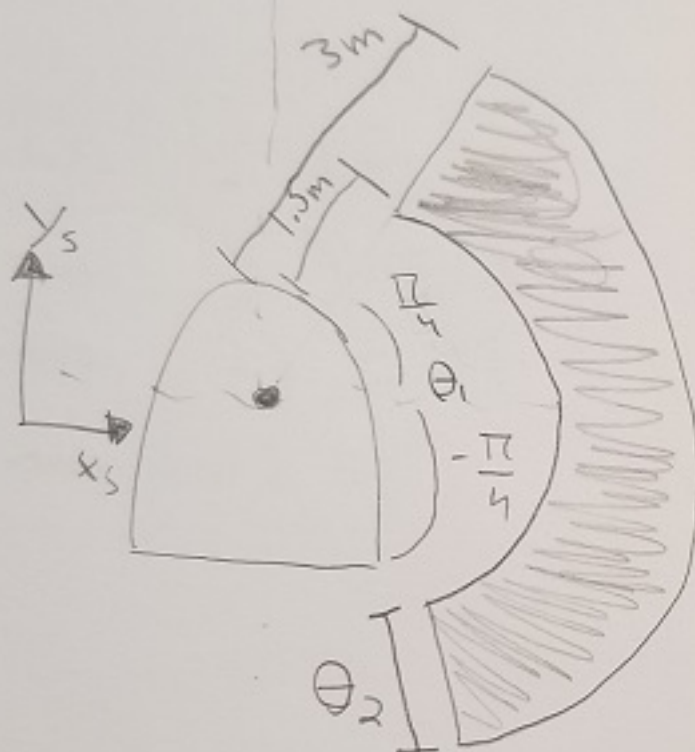
October 13th, 2020

We declare that this assignment is solely our own work, and is in accordance with the University of Toronto Code of Behaviour on Academic Matters.

This submission has been prepared using L^AT_EX.

QUESTION 1:

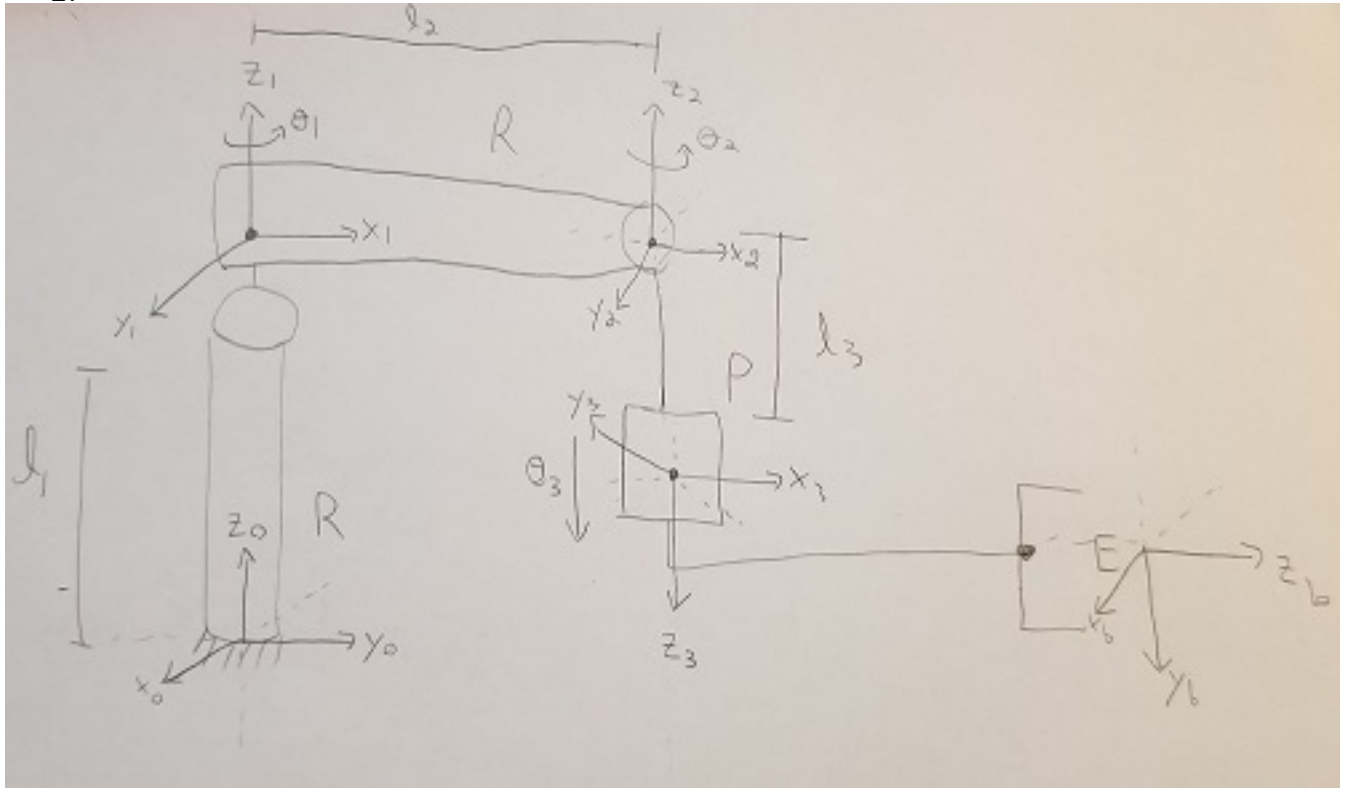
1.



$$-\frac{\pi}{4} \leq \theta_1 \leq \frac{\pi}{4}$$

$$1.5m \leq \theta_2 \leq 3m$$

2.



Below is the DH parameter table:

Joint (i)	α_i	a_i	d_i	ϕ_i
1	0	0	l_1	θ_1
2	0	l_2	0	θ_2
3	π	0	$l_3 + \theta_3$	0
End-Effector	0	l_4	0	0

QUESTION 2:

- Below is the DH parameter table:

Joint (i)	α_i	a_i	d_i	ϕ_i
1	0	0	0.333m	θ_1
2	$-\frac{\pi}{2}$	0	0	θ_2
3	$\frac{\pi}{2}$	0	0.316m	θ_3
4	$\frac{\pi}{2}$	0.0825m	0	θ_4
5	$-\frac{\pi}{2}$	-0.0825m	0.384m	θ_5
6	$\frac{\pi}{2}$	0	0	θ_6
7	$\frac{\pi}{2}$	0.088m	0	θ_7
End-Effector	0	0	0.107m	0

- For comparison between the two, there were slight differences past several decimal places (over 5) between the results and the code ran however these can be partially due to differences between the cosine and sine functions used.