

CpE360

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Homework #4

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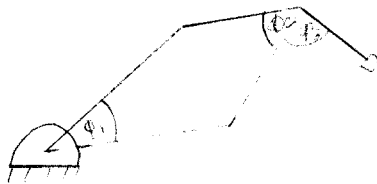
Robotics Homework #4

Kostyantyn Vovk [0416794]

Question 4.1

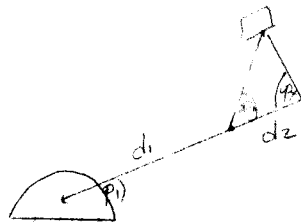
There are infinitely many solutions to the problem. This is because there are infinitely many configurations of the angles ϕ_1 , ϕ_2 and ϕ_3

as shown in the diagram below

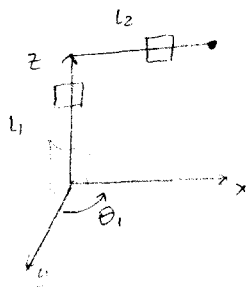


Question 4.2

Similarly, there is an infinite number of solutions for the three planar arm with prismatic joint since again there are an infinite number of configurations for the angles ϕ_1 and ϕ_2 and the length d_2 , illustrated in the diagram below :



Question 4.3



We have an end - effector position of $(x, y, z)^T$

The relationship between θ_1 and x and y is that of an $\text{ArcTan}[]$

And, $l_1 = z$

$$l_2 = \sqrt{x^2 + y^2}$$

4.4

