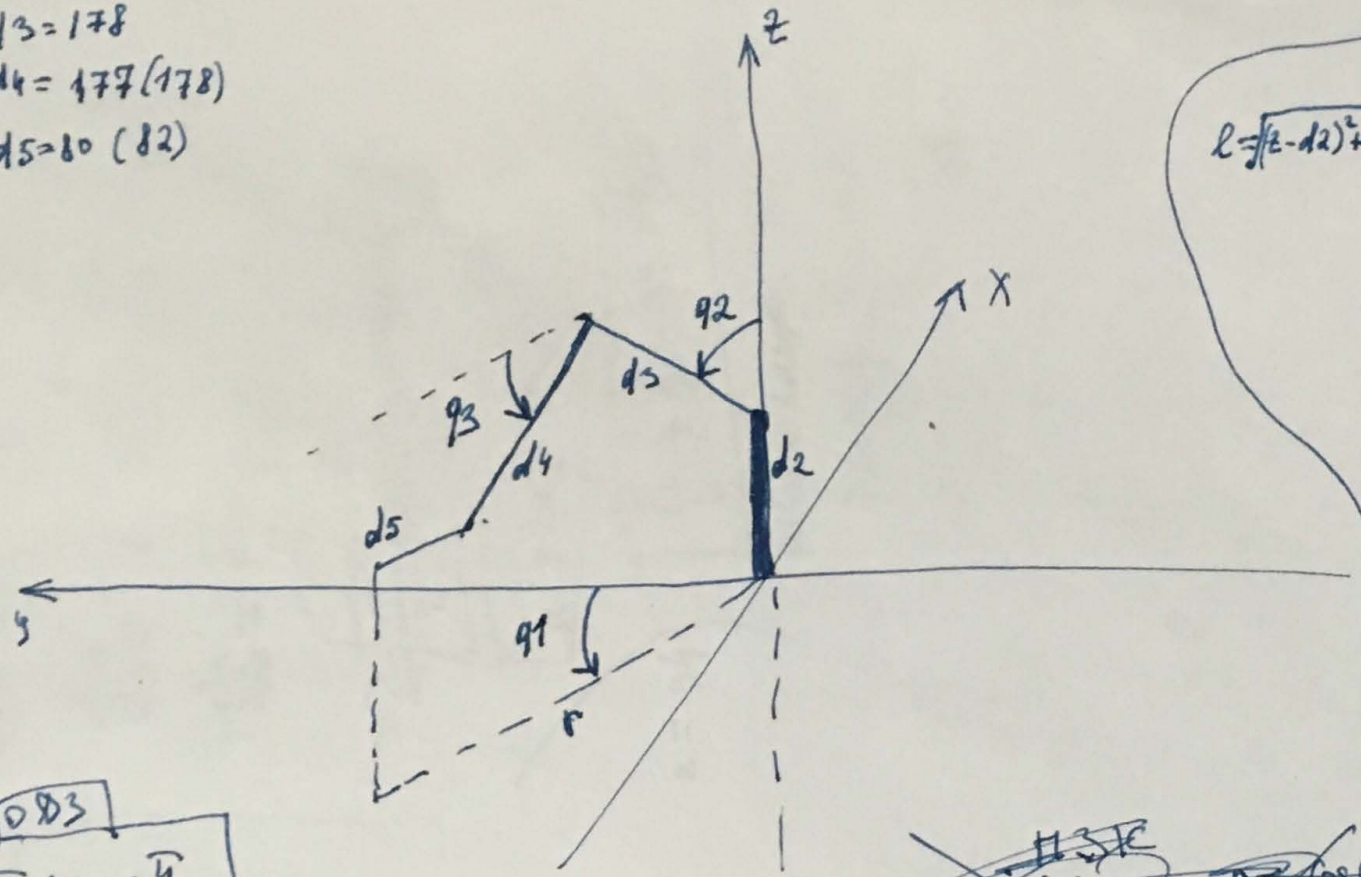
Robco 01

d2 = 190
d3 = 178
d4 = 177 (178)
d5 = 80 (82)



$q1 = \operatorname{atan2}(-x, y)$

$l = \sqrt{(z-d2)^2 + ll^2}$

$ll = \sqrt{x^2+y^2} - d5$

$a1 = \operatorname{atan2}(z-d2, ll)$

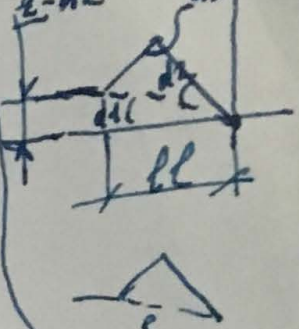
$a2 = \arccos\left(\frac{l^2 + d3^2 - d4^2}{2l \cdot d3}\right)$

$q2 = \frac{\pi}{2} - a1 - a2$

$a3 = \arccos\left(\frac{d4^2 + d3^2 - l^2}{2 d4 d3}\right)$

$q3 = \pi - a3 - \left(\frac{\pi}{2} - q2\right)$

D3K



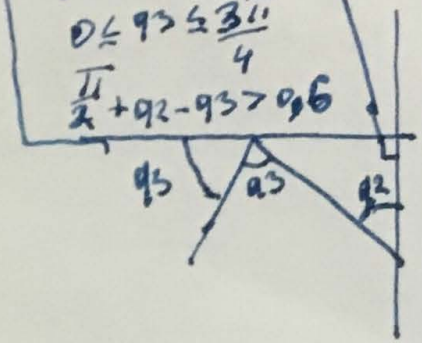
DD3

$-\frac{\pi}{3} \le q1 \le \frac{\pi}{3}$

$-\frac{\pi}{6} \le q2 \le \frac{\pi}{2}$

$0 \le q3 \le \frac{3\pi}{4}$

$\frac{\pi}{2} + q2 - q3 > 0{,}6$



DQ3:

$-\frac{\pi}{3} \le q1 \le \frac{\pi}{3}$

$-\frac{\pi}{2} \le q2 \le \frac{\pi}{6}$

$-\frac{3\pi}{4} \le q3 \le 0$

~~$x = \sin(q1) \cdot r$~~
~~$y = \cos(q1) \cdot r$~~
~~$z = \cos(q2) \cdot d3 + \sin(q3) \cdot d4$~~

~~$x = \cos(q2) \cdot d3 + \sin(q3) \cdot d4 + d5$~~

n3k

$r = \sin(q2) \cdot d3 + \cos(q3) \cdot d4 + d5$

$x = \sin(q1) \cdot r$

$y = \cos(q1) \cdot r$

$z = \cos(q2) \cdot d3 - \sin(q3) \cdot d4 + d2$

IK. 3DOF

04.04.20