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Task 2a

Here I just use the formula given in the exercise

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2b)

Here again, I use the formula given in the exercise and the Jv and Jw matrices from task 1b

The first pictures are just declaring matrices and variables

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Et bilde som inneholder tekst, innendørs, skjermbilde

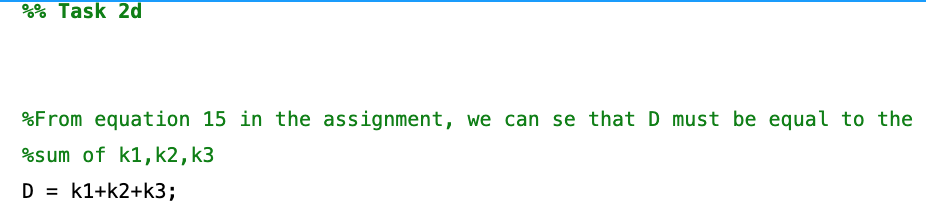
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K=

qdy\*((qdz\*(cos(th1)\*(I3x\*(cos(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) - sin(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)))\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) + I3y\*(cos(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) + sin(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)))\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3))) - sin(th1)\*(I3x\*(cos(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) - sin(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)))\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) - I3y\*(cos(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) + sin(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)))\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2))) + (703\*L3\*cos(th2\*th3)\*(L3\*cos(th2\*th3) + L2\*cos(th2)))/5000 + (703\*L3\*sin(th2\*th3)\*sin(th1)^2\*(L3\*sin(th2\*th3) + L2\*sin(th2)))/5000 + (703\*L3\*sin(th2\*th3)\*cos(th1)^2\*(L3\*sin(th2\*th3) + L2\*sin(th2)))/5000))/2 + (qdy\*((681\*L2^2\*cos(th2)^2)/2500 + (703\*cos(th1)^2\*(L3\*sin(th2\*th3) + L2\*sin(th2))^2)/5000 + cos(th1)\*(I3x\*(cos(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) - sin(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)))\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) + I3y\*(cos(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) + sin(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)))\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3))) + (703\*sin(th1)^2\*(L3\*sin(th2\*th3) + L2\*sin(th2))^2)/5000 - sin(th1)\*(I3x\*(cos(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) - sin(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)))\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) - I3y\*(cos(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) + sin(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)))\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2))) + (L3\*cos(th2\*th3) + L2\*cos(th2))\*((703\*L3\*cos(th2\*th3))/5000 + (703\*L2\*cos(th2))/5000) + cos(th1)\*(I2y\*cos(th2)\*(cos(th1)\*cos(th2) + sin(th1)\*sin(th2)) + I2x\*sin(th2)\*(cos(th1)\*sin(th2) - cos(th2)\*sin(th1))) - sin(th1)\*(I2x\*cos(th2)\*(cos(th1)\*sin(th2) - cos(th2)\*sin(th1)) - I2y\*sin(th2)\*(cos(th1)\*cos(th2) + sin(th1)\*sin(th2))) + (681\*L2^2\*cos(th1)^2\*sin(th2)^2)/2500 + (681\*L2^2\*sin(th1)^2\*sin(th2)^2)/2500))/2) + qdz\*((qdy\*(cos(th1)\*(I3x\*(cos(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) - sin(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)))\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) + I3y\*(cos(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) + sin(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)))\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3))) - sin(th1)\*(I3x\*(cos(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) - sin(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)))\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) - I3y\*(cos(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) + sin(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)))\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2))) + L3\*cos(th2\*th3)\* ((703\*L3\*cos(th2\*th3))/5000 + (703\*L2\*cos(th2))/5000) + (703\*L3\*sin(th2\*th3)\*sin(th1)^2\*(L3\*sin(th2\*th3) + L2\*sin(th2)))/5000 + (703\*L3\*sin(th2\*th3)\*cos(th1)^2\* (L3\*sin(th2\*th3) + L2\*sin(th2)))/5000))/2 + (qdz\*((703\*L3^2\*cos(th2\*th3)^2)/5000 + cos(th1)\*(I3x\*(cos(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) - sin(th1)\*(cos(th2)\* cos(th3) - sin(th2)\*sin(th3)))\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) + I3y\*(cos(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) + sin(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2))) \*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3))) - sin(th1)\*(I3x\*(cos(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)) - sin(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)))\*(cos(th2)\* cos(th3) - sin(th2)\*sin(th3)) - I3y\*(cos(th1)\*(cos(th2)\*cos(th3) - sin(th2)\*sin(th3)) + sin(th1)\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2)))\*(cos(th2)\*sin(th3) + cos(th3)\*sin(th2))) + (703\*L3^2\*sin(th2\*th3)^2\*cos(th1)^2)/5000 + (703\*L3^2\*sin(th2\*th3)^2\*sin(th1)^2)/5000))/2) + (qdx^2\*(I1z + I2z + I3z + (703\*cos(th1)^2\*(L3\*cos(th2\*th3) + L2\*cos(th2))^2)/5000 + (703\*sin(th1)^2\*(L3\*cos(th2\*th3) + L2\*cos(th2))^2)/5000 + (681\*L2^2\*cos(th1)^2\*cos(th2)^2)/2500 + (681\*L2^2\*cos(th2)^2\*sin(th1)^2)/2500))/2

Task 2d

Calculating D



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Automatisk generert beskrivelseCalculating g

Calculating C

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The answers here are simply too big to display, and therefore might be wrong. But when only using symbols for the calculations it’s near impossible to do effective debugging.

2e

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The same goes for 2e, which is simply too big to be displayed.