

```

##### Problem 1 #####
##### a) #####
[1.0*d2*cos(t1) - 1.0*l3*sin(t1)*cos(t3) - 1.0*l3*sin(t3)*cos(t1)      1.0*sin(t1)
  -1.0*l3*sin(t1)*cos(t3) - 1.0*l3*sin(t3)*cos(t1)]
[
]
[1.0*d2*sin(t1) - 1.0*l3*sin(t1)*sin(t3) + 1.0*l3*cos(t1)*cos(t3)      -1.0*cos(t1)
  -1.0*l3*sin(t1)*sin(t3) + 1.0*l3*cos(t1)*cos(t3)]
[
]
[
      0
-17      0      ]      6.12323399573677e
[
]
[
      0      0      ]      0
[
      0      ]
[
      0      ]
[
      0      ]
[
      0      ]
[
      1.0      1.0      ]      0
      1.0
##### b) #####
[1.0*d2*sin(t1) + 1.0*d2*cos(t1) - 1.0*l3*sin(t1)*sin(t3) - 1.0*l3*sin(t1)*cos(t3) -
  1.0*l3*sin(t3)*cos(t1) + 1.0*l3*cos(t1)*cos(t3)]
[
]
[
      1.0*sin(t1) - 1.0*cos(t1) + 6.123233995736
77e-17      ]
[
]
[
      -1.0*l3*sin(t1)*sin(t3) - 1.0*l3*sin(t1)*cos(t3) - 1.0*l3*sin(t3)*c
os(t1) + 1.0*l3*cos(t1)*cos(t3)      ]
##### Problem 2 #####
[[-1.0*l2*sin(t1)*cos(t2) - 1.0*l2*sin(t2)*cos(t1) - 1.0*l3*(-6.12323399573677e-17*s
in(t1)*sin(t2) + 6.12323399573677e-17*cos(t1)*cos(t2))*sin(t3) - 1.0*l3*(1.0*sin(t1)
*cos(t2) + 1.0*sin(t2)*cos(t1))*cos(t3) ]
[
]
[
]
[
      0
]
[
]
[
]
[
      0
]
[
]
[
]
[
      0
]
[
]
[
      1.0
]
, [-1.0*l2*sin(t1)*cos(t2) - 1.0*l2*sin(t2)*cos(t1) - 1.0*l3*(-6.12323399573677e-17*
sin(t1)*sin(t2) + 6.12323399573677e-17*cos(t1)*cos(t2))*sin(t3) - 1.0*l3*(1.0*sin(t1)
*cos(t2) + 1.0*sin(t2)*cos(t1))*cos(t3)

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[
    [-1.0*12*sin(t1)*sin(t2) + 1.0*12*cos(t1)*cos(t2) + 1.0*13*(-1.0*sin(t1)*sin(t2) +
    1.0*cos(t1)*cos(t2))*cos(t3) + 1.0*13*(-6.12323399573677e-17*sin(t1)*cos(t2) - 6.12
    323399573677e-17*sin(t2)*cos(t1))*sin(t3)
    [
        [
            0
        ]
        [
            0
        ]
        [
            0
        ]
        [
            1.0
        ]
    ], [
        -6.12323399
        573677e-17*13*(-6.12323399573677e-17*sin(t1)*sin(t2) + 6.12323399573677e-17*cos(t1)*
        cos(t2))*sin(t3) + 1.0*13*(1.0*sin(t1)*si
    ] [
        6.123233995
        73677e-17*13*(-1.0*sin(t1)*sin(t2) + 1.0*cos(t1)*cos(t2))*cos(t3) + 6.12323399573677
        e-17*13*(-6.12323399573677e-17*sin(t1)*co
    ] [
        [-(1.0*sin(t1)*sin(t2) - 1.0*cos(t1)*cos(t2))*(13*(-1.0*sin(t1)*sin(t2) + 1.0*cos
        (t1)*cos(t2))*cos(t3) + 13*(-6.12323399573677e-17*sin(t1)*cos(t2) - 6.12323399573677
        e-17*sin(t2)*cos(t1))*sin(t3)) + (1.0*sin
    ] [
        [
            1.0*sin(t1)*cos(t2) + 1.0*sin(t
        ] [
            1.0*sin(t1)*sin(t2) - 1.0*cos(t
        ] [
            6.12323399573677e-17
        n(t2) - 1.0*cos(t1)*cos(t2))*sin(t3) - 6.12323399573677e-17*13*(1.0*sin(t1)*cos(t2)
        + 1.0*sin(t2)*cos(t1))*cos(t3)
    ]
    ]
    s(t2) - 6.12323399573677e-17*sin(t2)*cos(t1))*sin(t3) - 1.0*13*(1.0*sin(t1)*cos(t2)
    + 1.0*sin(t2)*cos(t1))*sin(t3)

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]

]
(t1)*cos(t2) + 1.0*sin(t2)*cos(t1))*(13*(-6.12323399573677e-17*sin(t1)*sin(t2) + 6.1
2323399573677e-17*cos(t1)*cos(t2))*sin(t3) + 13*(1.0*sin(t1)*cos(t2) + 1.0*sin(t2)*c
os(t1))*cos(t3))]

]
2)*cos(t1)

]

]
1)*cos(t2)

]

]

]
##### Problem 3 #####
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