

Warning: Location E:\dang hoc\TT [KT]\bai tap\bai 5 specified for a File or Folder is invalid.

Warning: Location E:\dang hoc\TT [KT]\bai tap specified for a File or Folder is invalid.

>> Calculator

T_01 =

```
[ cos(t1), -sin(t1), 0, L1]
[ sin(t1),  cos(t1), 0,  0]
[      0,      0, 1, d1]
[      0,      0, 0,  1]
```

T_12 =

```
[ cos(t2), -sin(t2), 0, 0]
[      0,      0, -1, 0]
[ sin(t2),  cos(t2), 0, 0]
[      0,      0, 0, 1]
```

T_23 =

```
[ cos(t3), -sin(t3), 0, L2]
[ sin(t3),  cos(t3), 0,  0]
[      0,      0, 1,  0]
[      0,      0, 0,  1]
```

T_34 =

```
[ 1, 0, 0, L3]
[ 0, 1, 0,  0]
[ 0, 0, 1,  0]
[ 0, 0, 0,  1]
```

T_04 =

```
[ cos(t1)*cos(t2)*cos(t3) - cos(t1)*sin(t2)*sin(t3), - cos(t1)*cos(t2)*sin(t3) - cos(t1)*cos(t3)*sin(t2), sin(t1), L1 - L3*(cos(t1)*sin(t2)*sin(t3) - cos(t1)*cos(t2)*cos(t3)) + L2*cos(t1)*cos(t2)]
[ cos(t2)*cos(t3)*sin(t1) - sin(t1)*sin(t2)*sin(t3), - cos(t2)*sin(t1)*sin(t3) - cos(t3)*sin(t1)*sin(t2), -cos(t1), L2*cos(t2)*sin(t1) - L3*(sin(t1)*sin(t2)*sin(t3) - cos(t2)*cos(t3)*sin(t1))]
[ cos(t2)*sin(t3) + cos(t3)*sin(t2), cos(t2)*cos(t3) - sin(t2)*sin(t3), 0, d1 + L3*(cos(t2)*sin(t3) + cos(t3)*sin(t2)) + L2*sin(t2)]
```

```
[                                0, ↵  
0,                                ↵  
1]
```

$T_x =$

$L1 - L3*(\cos(t1)*\sin(t2)*\sin(t3) - \cos(t1)*\cos(t2)*\cos(t3)) + L2*\cos(t1)*\cos(t2)$

$T_y =$

$\sin(t1)*(L3*\cos(t2 + t3) + L2*\cos(t2))$

$T_z =$

$d1 + L3*\sin(t2 + t3) + L2*\sin(t2)$

$T_{nx} =$

$Px*\cos(t1) - L1*\cos(t1) + Py*\sin(t1)$

$T_{ny} =$

$Py*\cos(t1) + L1*\sin(t1) - Px*\sin(t1)$

$T_{nz} =$

$Pz - d1$

$T_{mx} =$

$L3*\cos(t2 + t3) + L2*\cos(t2)$

$T_{my} =$

0

$T_{mz} =$

$L3*\sin(t2 + t3) + L2*\sin(t2)$

>>