

FOR d3= 0

rotational matrix of 3dof arm

```
[[ -0.23882954  0.92050485  0.30924305]
 [ -0.56264713 -0.39073113  0.72853098]
 [  0.79144719  0.          0.61123755]]
```

DH parameters of 3dof arm

```
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963 1.57079633  0.          0.          ]
 [ 0.          0.          0.         14.12         ]]
```

homologous transformation matrix

```
[[ -0.23882954  0.92050485  0.30924305  4.36651192]
 [ -0.56264713 -0.39073113  0.72853098 10.28685743]
 [  0.79144719  0.          0.61123755  9.63067425]
 [  0.          0.          0.          1.          ]]
```

X COORDINATE OF END EFFECTOR 4.36651192  
Y COORDINATE OF END EFFECTOR 10.28685743  
Z COORDINATE OF END EFFECTOR 9.63067425

FOR d3= 1

rotational matrix of 3dof arm

```
[[ -0.23882954  0.92050485  0.30924305]
 [ -0.56264713 -0.39073113  0.72853098]
 [  0.79144719  0.          0.61123755]]
```

DH parameters of 3dof arm

```
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963 1.57079633  0.          0.          ]
 [ 0.          0.          0.         15.12         ]]
```

homologous transformation matrix

```
[[ -0.23882954  0.92050485  0.30924305  4.67575497]
 [ -0.56264713 -0.39073113  0.72853098 11.0153884 ]
 [  0.79144719  0.          0.61123755 10.2419118 ]
 [  0.          0.          0.          1.          ]]
```

X COORDINATE OF END EFFECTOR 4.67575497  
Y COORDINATE OF END EFFECTOR 11.0153884  
Z COORDINATE OF END EFFECTOR 10.2419118

FOR d3= 2

rotational matrix of 3dof arm

```
[[-0.23882954  0.92050485  0.30924305]
 [-0.56264713 -0.39073113  0.72853098]
 [ 0.79144719  0.          0.61123755]]
```

DH parameters of 3dof arm

```
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963 1.57079633  0.          0.          ]
 [ 0.          0.          0.          16.12         ]]
```

homologous transformation matrix of 3dof arm

```
[[-0.23882954  0.92050485  0.30924305  4.98499802]
 [-0.56264713 -0.39073113  0.72853098  11.74391938]
 [ 0.79144719  0.          0.61123755  10.85314936]
 [ 0.          0.          0.          1.          ]]
```

X COORDINATE OF END EFFECTOR 4.98499802

Y COORDINATE OF END EFFECTOR 11.74391938

Z COORDINATE OF END EFFECTOR 10.85314936

FOR d3= 3

rotational matrix of 3dof arm

```
[[-0.23882954  0.92050485  0.30924305]
 [-0.56264713 -0.39073113  0.72853098]
 [ 0.79144719  0.          0.61123755]]
```

DH parameters of 3dof arm

```
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963 1.57079633  0.          0.          ]
 [ 0.          0.          0.          17.12         ]]
```

homologous transformation matrix of 3dof arm

```
[[-0.23882954  0.92050485  0.30924305  5.29424108]
 [-0.56264713 -0.39073113  0.72853098  12.47245036]
 [ 0.79144719  0.          0.61123755  11.46438691]
 [ 0.          0.          0.          1.          ]]
```

X COORDINATE OF END EFFECTOR 5.29424108

Y COORDINATE OF END EFFECTOR 12.47245036

Z COORDINATE OF END EFFECTOR 11.46438691

FOR d3= 4

rotational matrix of 3dof arm

```
[[-0.23882954  0.92050485  0.30924305]
 [-0.56264713 -0.39073113  0.72853098]
 [ 0.79144719  0.          0.61123755]]
```

DH parameters of 3dof arm

```
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963 1.57079633  0.          0.          ]
 [ 0.          0.          0.          18.12         ]]
```

homologous transformation matrix

```
[[-0.23882954  0.92050485  0.30924305  5.60348413]
 [-0.56264713 -0.39073113  0.72853098 13.20098134]
 [ 0.79144719  0.          0.61123755 12.07562446]
 [ 0.          0.          0.          1.          ]]
```

X COORDINATE OF END EFFECTOR 5.60348413  
Y COORDINATE OF END EFFECTOR 13.20098134  
Z COORDINATE OF END EFFECTOR 12.07562446

FOR d3= 5

rotational matrix of 3dof arm

```
[[-0.23882954  0.92050485  0.30924305]
 [-0.56264713 -0.39073113  0.72853098]
 [ 0.79144719  0.          0.61123755]]
```

DH parameters of 3dof arm

```
[[ 1.1693706  1.57079633  0.          1.          ]
 [ 2.22841963 1.57079633  0.          0.          ]
 [ 0.          0.          0.          19.12         ]]
```

homologous transformation matrix

```
[[-0.23882954  0.92050485  0.30924305  5.91272718]
 [-0.56264713 -0.39073113  0.72853098 13.92951232]
 [ 0.79144719  0.          0.61123755 12.68686201]
 [ 0.          0.          0.          1.          ]]
```

X COORDINATE OF END EFFECTOR 5.91272718  
Y COORDINATE OF END EFFECTOR 13.92951232  
Z COORDINATE OF END EFFECTOR 12.68686201