

Output of rotation for  $\pi/2$

```
[[ 6.12323400e-17  1.00000000e+00  0.00000000e+00]
 [ -1.00000000e+00  6.12323400e-17  0.00000000e+00]
 [  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

output of rotation for theta being 0 to  $\pi$

```
[[ 1.  0.  0.]
 [-0.  1.  0.]
 [ 0.  0.  1.]]
```

```
[[ 9.99999998e-01  5.48311355e-05  0.00000000e+00]
 [ -5.48311355e-05  9.99999998e-01  0.00000000e+00]
 [  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

```
[[ 9.99999994e-01  1.09662271e-04  0.00000000e+00]
 [ -1.09662271e-04  9.99999994e-01  0.00000000e+00]
 [  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

```
[[ 9.99999986e-01  1.64493406e-04  0.00000000e+00]
 [ -1.64493406e-04  9.99999986e-01  0.00000000e+00]
 [  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

```
[[ 9.99999976e-01  2.19324540e-04  0.00000000e+00]
 [ -2.19324540e-04  9.99999976e-01  0.00000000e+00]
 [  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

```
[[ 9.99999962e-01  2.74155674e-04  0.00000000e+00]
 [ -2.74155674e-04  9.99999962e-01  0.00000000e+00]
 [  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

```
[[ 9.99999946e-01  3.28986807e-04  0.00000000e+00]
 [ -3.28986807e-04  9.99999946e-01  0.00000000e+00]
 [  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

```
[[ 9.99999926e-01  3.83817940e-04  0.00000000e+00]
 [ -3.83817940e-04  9.99999926e-01  0.00000000e+00]
 [  0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

```
[ [ 9.99999904e-01  4.38649070e-04  0.00000000e+00]
  [ -4.38649070e-04  9.99999904e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00] ]
```

```
[ [ 9.99999878e-01  4.93480200e-04  0.00000000e+00]
  [ -4.93480200e-04  9.99999878e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00] ]
```

```
[ [ 9.99999850e-01  5.48311328e-04  0.00000000e+00]
  [ -5.48311328e-04  9.99999850e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00] ]
```

```
[ [ 9.99999818e-01  6.03142455e-04  0.00000000e+00]
  [ -6.03142455e-04  9.99999818e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00] ]
```

```
[ [ 9.99999784e-01  6.57973579e-04  0.00000000e+00]
  [ -6.57973579e-04  9.99999784e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00] ]
```

```
[ [ 9.99999746e-01  7.12804702e-04  0.00000000e+00]
  [ -7.12804702e-04  9.99999746e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00] ]
```

```
[ [ 9.99999705e-01  7.67635822e-04  0.00000000e+00]
  [ -7.67635822e-04  9.99999705e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00] ]
```

```
[ [ 9.99999662e-01  8.22466941e-04  0.00000000e+00]
  [ -8.22466941e-04  9.99999662e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00] ]
```

```
[ [ 9.99999615e-01  8.77298056e-04  0.00000000e+00]
  [ -8.77298056e-04  9.99999615e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00] ]
```

```
[ [ 9.99999566e-01  9.32129170e-04  0.00000000e+00]
  [ -9.32129170e-04  9.99999566e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00] ]
```

```
[ [ 9.99999513e-01  9.86960280e-04  0.00000000e+00]
  [-9.86960280e-04  9.99999513e-01  0.00000000e+00]
  [ 0.00000000e+00  0.00000000e+00  1.00000000e+00]]
```

```
[ [ 0.99999946  0.00104179  0.        ]
  [-0.00104179  0.99999946  0.        ]
  [ 0.          0.          1.        ]]
```

```
[ [ 0.9999994  0.00109662  0.        ]
  [-0.00109662  0.9999994  0.        ]
  [ 0.          0.          1.        ]]
```

```
[ [ 0.99999934  0.00115145  0.        ]
  [-0.00115145  0.99999934  0.        ]
  [ 0.          0.          1.        ]]
```

```
[ [ 0.99999927  0.00120628  0.        ]
  [-0.00120628  0.99999927  0.        ]
  [ 0.          0.          1.        ]]
```

```
[ [ 0.9999992  0.00126112  0.        ]
  [-0.00126112  0.9999992  0.        ]
  [ 0.          0.          1.        ]]
```

```
[ [ 0.99999913  0.00131595  0.        ]
  [-0.00131595  0.99999913  0.        ]
  [ 0.          0.          1.        ]]
```

```
[ [ 0.99999906  0.00137078  0.        ]
  [-0.00137078  0.99999906  0.        ]
  [ 0.          0.          1.        ]]
```

```
[ [ 0.99999898  0.00142561  0.        ]
  [-0.00142561  0.99999898  0.        ]
  [ 0.          0.          1.        ]]
```

```
[ [ 0.9999989  0.00148044  0.        ]
  [-0.00148044  0.9999989  0.        ]
  [ 0.          0.          1.        ]]
```

```
[ [ 0.99999882  0.00153527  0.      ]  
  [-0.00153527  0.99999882  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999874  0.0015901  0.      ]  
  [-0.0015901  0.99999874  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999865  0.00164493  0.      ]  
  [-0.00164493  0.99999865  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999856  0.00169976  0.      ]  
  [-0.00169976  0.99999856  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999846  0.0017546  0.      ]  
  [-0.0017546  0.99999846  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999836  0.00180943  0.      ]  
  [-0.00180943  0.99999836  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999826  0.00186426  0.      ]  
  [-0.00186426  0.99999826  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999816  0.00191909  0.      ]  
  [-0.00191909  0.99999816  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999805  0.00197392  0.      ]  
  [-0.00197392  0.99999805  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999794  0.00202875  0.      ]  
  [-0.00202875  0.99999794  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999783  0.00208358  0.      ]  
  [-0.00208358  0.99999783  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999771  0.00213841  0.      ]  
  [-0.00213841  0.99999771  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999759  0.00219324  0.      ]  
  [-0.00219324  0.99999759  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999747  0.00224807  0.      ]  
  [-0.00224807  0.99999747  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999735  0.00230291  0.      ]  
  [-0.00230291  0.99999735  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999722  0.00235774  0.      ]  
  [-0.00235774  0.99999722  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999709  0.00241257  0.      ]  
  [-0.00241257  0.99999709  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999696  0.0024674   0.      ]  
  [-0.0024674   0.99999696  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999682  0.00252223  0.      ]  
  [-0.00252223  0.99999682  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999668  0.00257706  0.      ]  
  [-0.00257706  0.99999668  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999654  0.00263189  0.      ]  
  [-0.00263189  0.99999654  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999639  0.00268672  0.      ]  
  [-0.00268672  0.99999639  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999624  0.00274155  0.      ]  
  [-0.00274155  0.99999624  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999609  0.00279638  0.      ]  
  [-0.00279638  0.99999609  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999594  0.00285122  0.      ]  
  [-0.00285122  0.99999594  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999578  0.00290605  0.      ]  
  [-0.00290605  0.99999578  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999562  0.00296088  0.      ]  
  [-0.00296088  0.99999562  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999545  0.00301571  0.      ]  
  [-0.00301571  0.99999545  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999529  0.00307054  0.      ]  
  [-0.00307054  0.99999529  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999512  0.00312537  0.      ]  
  [-0.00312537  0.99999512  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999494  0.0031802  0.      ]  
  [-0.0031802  0.99999494  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999477  0.00323503  0.      ]  
  [-0.00323503  0.99999477  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999459  0.00328986  0.      ]  
  [-0.00328986  0.99999459  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999441  0.00334469  0.      ]  
  [-0.00334469  0.99999441  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999422  0.00339952  0.      ]  
  [-0.00339952  0.99999422  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999403  0.00345435  0.      ]  
  [-0.00345435  0.99999403  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999384  0.00350919  0.      ]  
  [-0.00350919  0.99999384  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999365  0.00356402  0.      ]  
  [-0.00356402  0.99999365  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999345  0.00361885  0.      ]  
  [-0.00361885  0.99999345  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999325  0.00367368  0.      ]  
  [-0.00367368  0.99999325  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999305  0.00372851  0.      ]  
  [-0.00372851  0.99999305  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999284  0.00378334  0.      ]  
  [-0.00378334  0.99999284  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999263  0.00383817  0.      ]  
  [-0.00383817  0.99999263  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999242  0.003893     0.      ]  
  [-0.003893    0.99999242  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999221  0.00394783  0.      ]  
  [-0.00394783  0.99999221  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999199  0.00400266  0.      ]  
  [-0.00400266  0.99999199  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999177  0.00405749  0.      ]  
  [-0.00405749  0.99999177  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999154  0.00411232  0.      ]  
  [-0.00411232  0.99999154  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999132  0.00416715  0.      ]  
  [-0.00416715  0.99999132  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999109  0.00422198  0.      ]  
  [-0.00422198  0.99999109  0.      ]  
  [ 0.          0.          1.      ] ]]
```



```
[ [ 0.99999085  0.00427682  0.      ]  
  [-0.00427682  0.99999085  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999062  0.00433165  0.      ]  
  [-0.00433165  0.99999062  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999038  0.00438648  0.      ]  
  [-0.00438648  0.99999038  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99999014  0.00444131  0.      ]  
  [-0.00444131  0.99999014  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998989  0.00449614  0.      ]  
  [-0.00449614  0.99998989  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998964  0.00455097  0.      ]  
  [-0.00455097  0.99998964  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998939  0.0046058   0.      ]  
  [-0.0046058   0.99998939  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998914  0.00466063  0.      ]  
  [-0.00466063  0.99998914  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998888  0.00471546  0.      ]  
  [-0.00471546  0.99998888  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998862  0.00477029  0.      ]  
  [-0.00477029  0.99998862  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998836  0.00482512  0.      ]  
  [-0.00482512  0.99998836  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998809  0.00487995  0.      ]  
  [-0.00487995  0.99998809  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998782  0.00493478  0.      ]  
  [-0.00493478  0.99998782  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998755  0.00498961  0.      ]  
  [-0.00498961  0.99998755  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998728  0.00504444  0.      ]  
  [-0.00504444  0.99998728  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.999987    0.00509927  0.      ]  
  [-0.00509927  0.999987    0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998672  0.0051541   0.      ]  
  [-0.0051541   0.99998672  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998643  0.00520893  0.      ]  
  [-0.00520893  0.99998643  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998615  0.00526376  0.      ]  
  [-0.00526376  0.99998615  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998586  0.0053186   0.      ]  
  [-0.0053186   0.99998586  0.      ]  
  [ 0.          0.          1.      ] ]]
```

```
[ [ 0.99998556  0.00537343  0.      ]  
  [-0.00537343  0.99998556  0.      ]  
  [ 0.          0.          1.      ] ]
```

```
[ [ 0.99998527  0.00542826  0.      ]  
  [-0.00542826  0.99998527  0.      ]  
  [ 0.          0.          1.      ] ]
```

```
[ [ 0.99998497  0.00548309  0.      ]  
  [-0.00548309  0.99998497  0.      ]  
  [ 0.          0.          1.      ] ]
```