Matplotlib绘制折线图

In [1]:
```
import matplotlib.pyplot as plt
import numpy as np
```

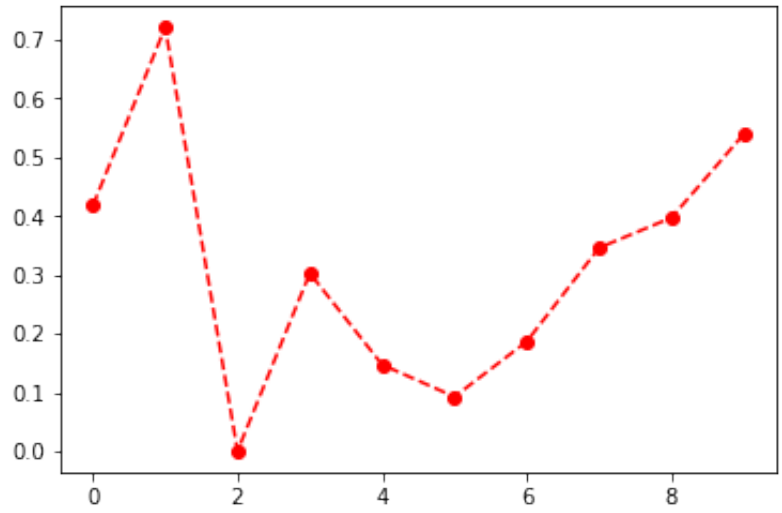
In [2]:
```
x = np.arange(10)
x
```

Out[2]:
```
array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9])
```

In [3]:
```
np.random.seed(1)
y = np.random.random(size=10)
y
```

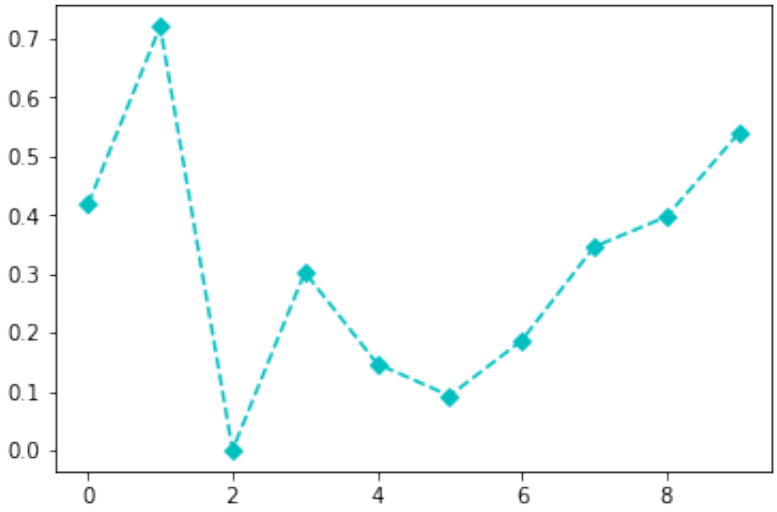
Out[3]:
```
array([4.17022005e-01, 7.20324493e-01, 1.14374817e-04, 3.02332573e
-01,
       1.46755891e-01, 9.23385948e-02, 1.86260211e-01, 3.45560727e
-01,
       3.96767474e-01, 5.38816734e-01])
```

In [4]:
```
plt.plot(x, y, color='r', linestyle='--', marker='o')    # linestyl
e:    -  --  -.  :
plt.show()
```



简写形式

In [5]:
```
plt.plot(x, y, 'c--D')    # linestyle:    -  --  -.  :
plt.show()
```



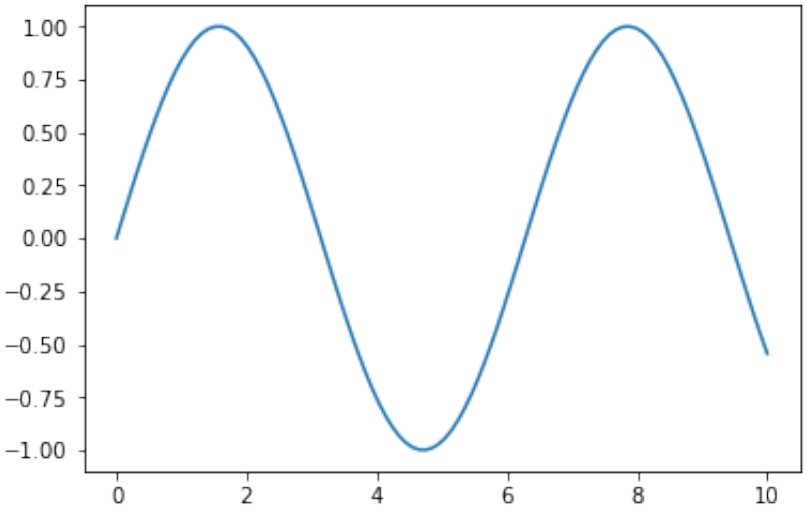
In [6]:
```
x = np.linspace(0, 10, 100)
x
```

```
Out[6]: array([ 0.        ,  0.1010101 ,  0.2020202 ,  0.3030303 ,  0.4040
        404 ,
               0.50505051,  0.60606061,  0.70707071,  0.80808081,  0.9090
        9091,
               1.01010101,  1.11111111,  1.21212121,  1.31313131,  1.4141
        4141,
               1.51515152,  1.61616162,  1.71717172,  1.81818182,  1.9191
        9192,
               2.02020202,  2.12121212,  2.22222222,  2.32323232,  2.4242
        4242,
               2.52525253,  2.62626263,  2.72727273,  2.82828283,  2.9292
        9293,
               3.03030303,  3.13131313,  3.23232323,  3.33333333,  3.4343
        4343,
               3.53535354,  3.63636364,  3.73737374,  3.83838384,  3.9393
        9394,
               4.04040404,  4.14141414,  4.24242424,  4.34343434,  4.4444
        4444,
               4.54545455,  4.64646465,  4.74747475,  4.84848485,  4.9494
        9495,
               5.05050505,  5.15151515,  5.25252525,  5.35353535,  5.4545
        4545,
               5.55555556,  5.65656566,  5.75757576,  5.85858586,  5.9595
        9596,
               6.06060606,  6.16161616,  6.26262626,  6.36363636,  6.4646
        4646,
               6.56565657,  6.66666667,  6.76767677,  6.86868687,  6.9696
        9697,
               7.07070707,  7.17171717,  7.27272727,  7.37373737,  7.4747
        4747,
               7.57575758,  7.67676768,  7.77777778,  7.87878788,  7.9797
        9798,
               8.08080808,  8.18181818,  8.28282828,  8.38383838,  8.4848
        4848,
               8.58585859,  8.68686869,  8.78787879,  8.88888889,  8.9898
        9899,
               9.09090909,  9.19191919,  9.29292929,  9.39393939,  9.4949
        4949,
               9.5959596 ,  9.6969697 ,  9.7979798 ,  9.8989899 , 10.
        ])
```

In [7]:
```
y = np.sin(x)
y
```

Out[7]:
```
array([ 0.        ,  0.10083842,  0.20064886,  0.2984138 ,  0.3931
3661,
        0.48385164,  0.56963411,  0.64960951,  0.72296256,  0.7889
4546,
        0.84688556,  0.8961922 ,  0.93636273,  0.96698762,  0.9877
5469,
        0.99845223,  0.99897117,  0.98930624,  0.96955595,  0.9399
2165,
        0.90070545,  0.85230712,  0.79522006,  0.73002623,  0.6573
9025,
        0.57805259,  0.49282204,  0.40256749,  0.30820902,  0.2107
0855,
        0.11106004,  0.01027934, -0.09060615, -0.19056796, -0.2885
8706,
       -0.38366419, -0.47483011, -0.56115544, -0.64176014, -0.7158
225 ,
       -0.7825875 , -0.84137452, -0.89158426, -0.93270486, -0.9643
1712,
       -0.98609877, -0.99782778, -0.99938456, -0.99075324, -0.9720
2182,
       -0.94338126, -0.90512352, -0.85763861, -0.80141062, -0.7370
1276,
       -0.66510151, -0.58640998, -0.50174037, -0.41195583, -0.3179
7166,
       -0.22074597, -0.12126992, -0.0205576 ,  0.0803643 ,  0.1804
6693,
        0.27872982,  0.37415123,  0.46575841,  0.55261747,  0.6338
4295,
        0.7086068 ,  0.77614685,  0.83577457,  0.8868821 ,  0.9289
4843,
        0.96154471,  0.98433866,  0.99709789,  0.99969234,  0.9920
9556,
        0.97438499,  0.94674118,  0.90944594,  0.86287948,  0.8075
165 ,
        0.74392141,  0.6727425 ,  0.59470541,  0.51060568,  0.4213
0064,
        0.32770071,  0.23076008,  0.13146699,  0.03083368, -0.0701
1396,
       -0.17034683, -0.26884313, -0.36459873, -0.45663749, -0.5440
2111])
```

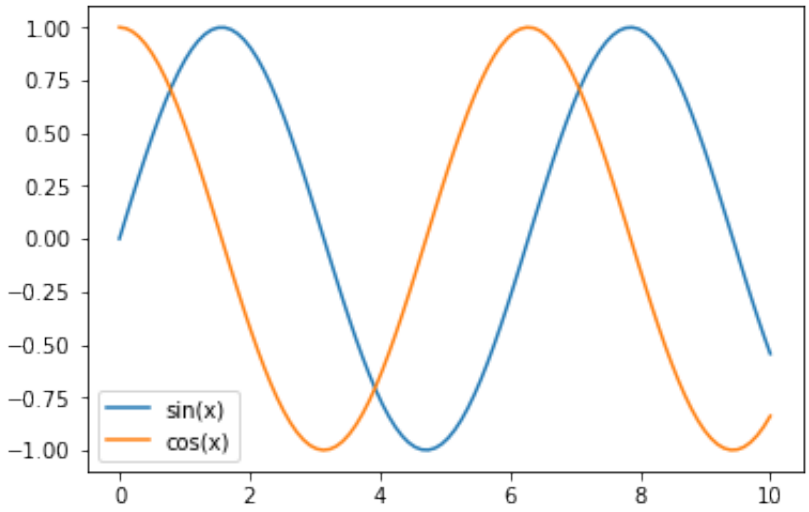
In [8]:
```
plt.plot(x, y)
plt.show()
```



In [9]:
```
y2 = np.cos(x)
y2
```

```
Out[9]: array([ 1.        ,  0.99490282,  0.97966323,  0.95443659,  0.9194
        8007,
                0.87515004,  0.8218984 ,  0.76026803,  0.69088721,  0.6144
        6323,
                0.53177518,  0.44366602,  0.35103397,  0.25482335,  0.1560
        1496,
                0.0556161 , -0.04534973, -0.14585325, -0.24486989, -0.3413
        9023,
               -0.43443032, -0.52304166, -0.60632092, -0.68341913, -0.7535
        5031,
               -0.81599952, -0.87013012, -0.91539031, -0.95131866, -0.9775
        4893,
               -0.9938137 , -0.99994717, -0.9958868 , -0.981674  , -0.9574
        5366,
               -0.92347268, -0.88007748, -0.82771044, -0.76690542, -0.6982
        8229,
               -0.6225406 , -0.54045251, -0.45285485, -0.36064061, -0.2647
        4988,
               -0.16616018, -0.06587659,  0.03507857,  0.13567613,  0.2348
        9055,
                0.33171042,  0.4251487 ,  0.51425287,  0.59811455,  0.6758
        7883,
                0.74675295,  0.8100144 ,  0.86501827,  0.91120382,  0.9481
        0022,
                0.97533134,  0.99261957,  0.99978867,  0.99676556,  0.9835
        8105,
                0.96036956,  0.9273677 ,  0.88491192,  0.83343502,  0.7734
        6177,
                0.70560358,  0.63055219,  0.54907273,  0.46199582,  0.3702
        0915,
                0.27464844,  0.17628785,  0.07613012, -0.0248037 , -0.1254
        8467,
               -0.2248864 , -0.32199555, -0.41582217, -0.50540974, -0.5898
        4498,
               -0.66826712, -0.7398767 , -0.8039437 , -0.859815  , -0.9069
        2104,
               -0.94478159, -0.97301068, -0.99132055, -0.99952453, -0.9975
        3899,
               -0.98538417, -0.96318398, -0.93116473, -0.88965286, -0.8390
        7153])
```

In [10]:
```
plt.plot(x, y, label='sin(x)')
plt.plot(x, y2, label='cos(x)')
plt.legend()
plt.show()
```

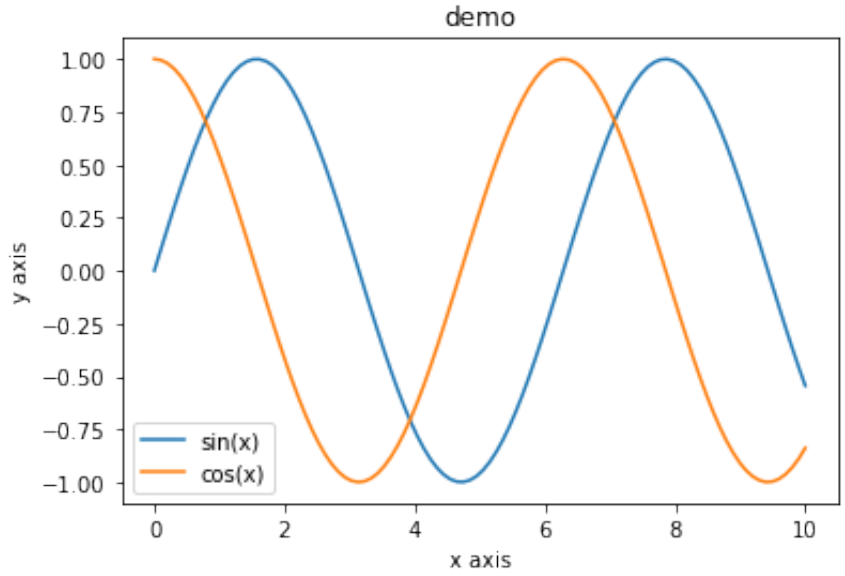


In [11]:
```
plt.plot(x, y, label='sin(x)')
plt.plot(x, y2, label='cos(x)')
plt.legend()

plt.xlabel("x axis")
plt.ylabel("y axis")

plt.title("demo")

plt.show()
```



In [12]:
```
plt.plot(x, y, label='sin(x)')
plt.plot(x, y2, label='cos(x)')
plt.legend()

plt.axis([-5, 15, -2, 2])

plt.show()
```