In [1]:
```python
import numpy as np
import matplotlib.pyplot  as plt
a=np.array([[1,2,3],[4,5,6]])
plt.plot(a)
plt.show()
```
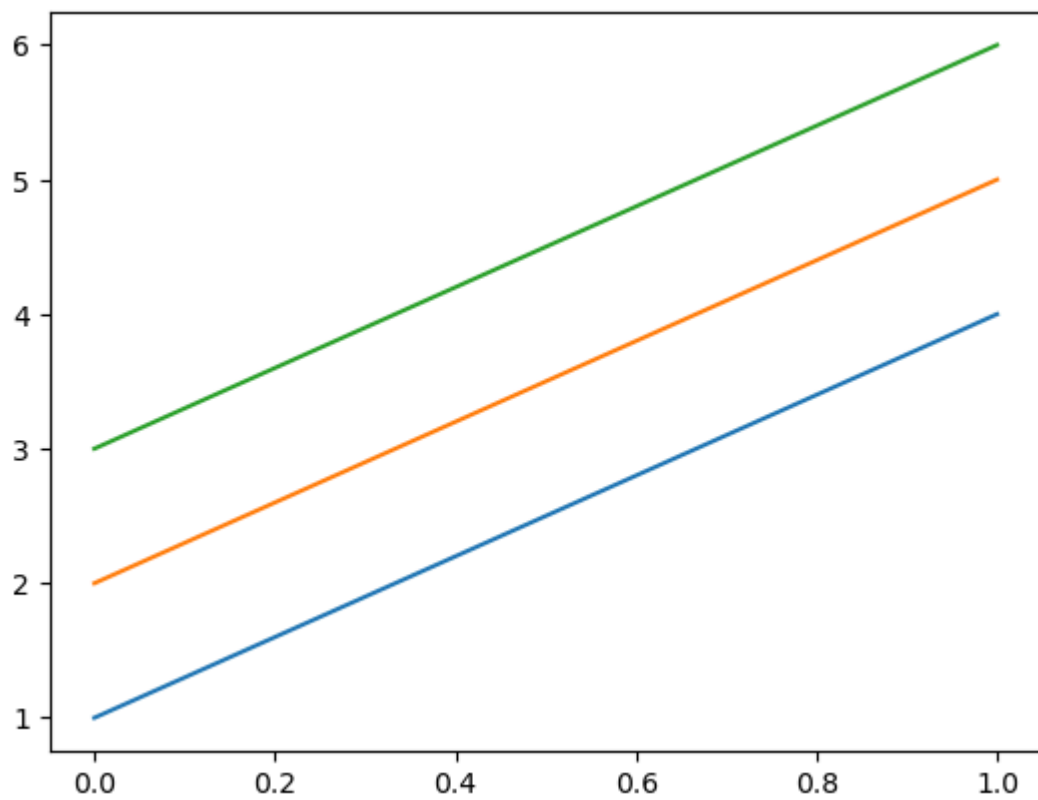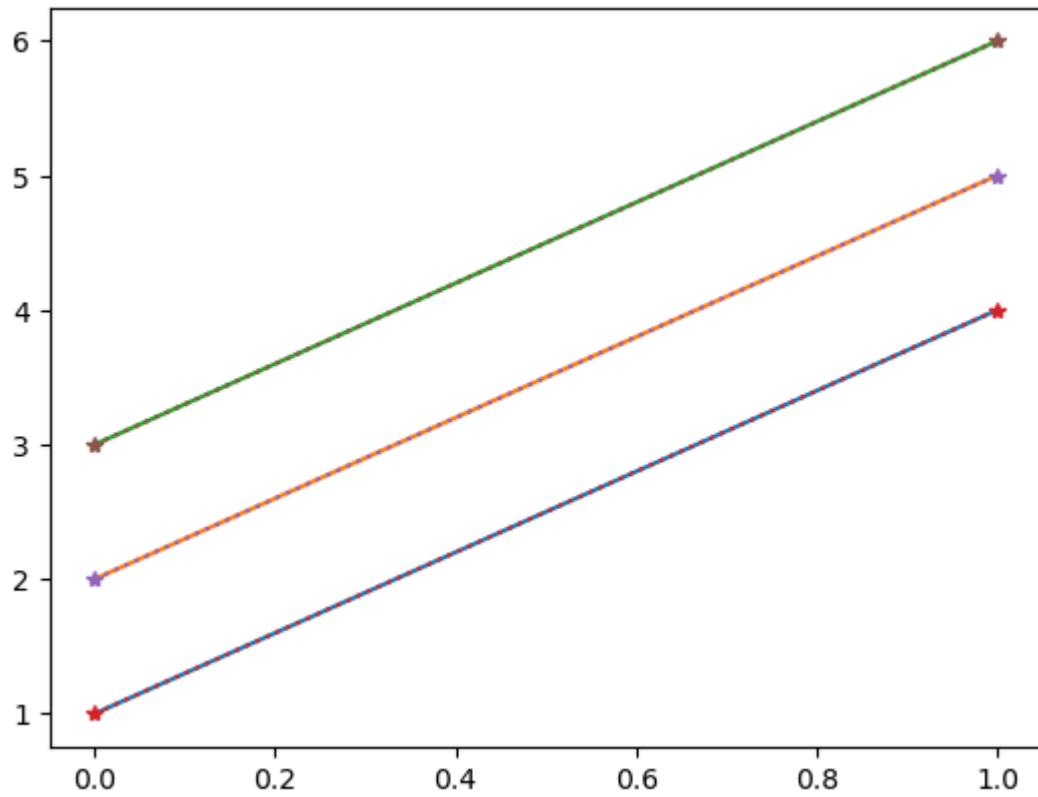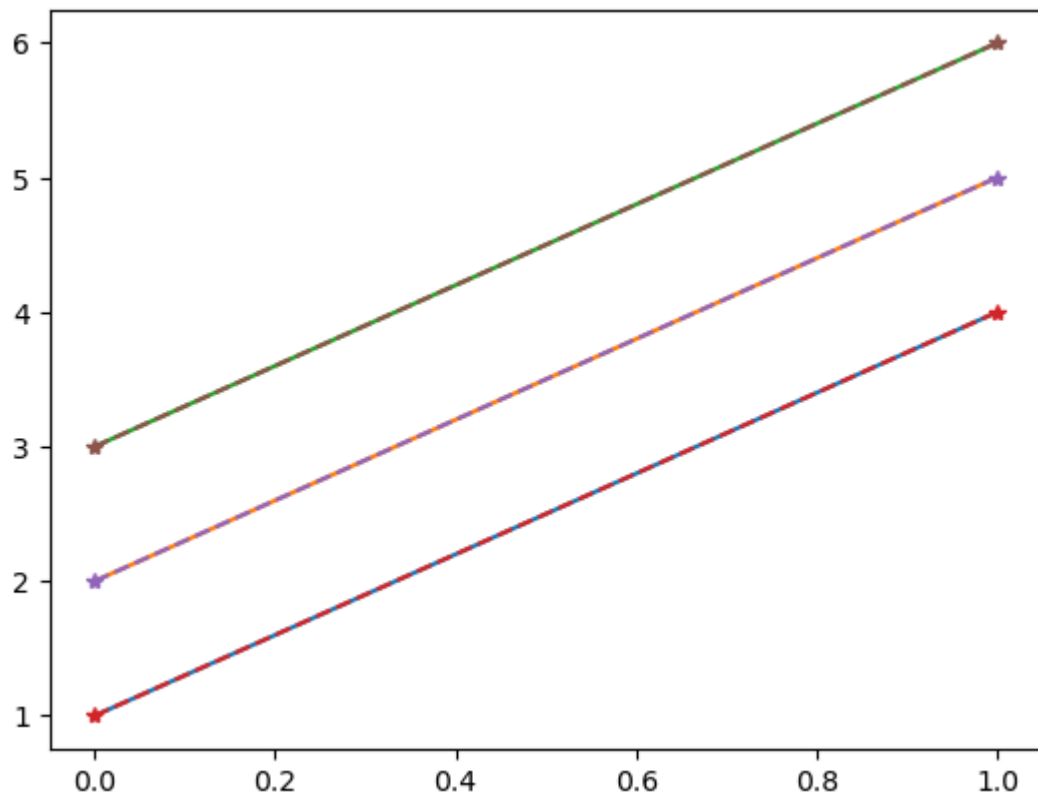


```python
import numpy as np
import matplotlib.pyplot  as plt
a=np.array([[1,2,3],[4,5,6]])
plt.plot(a)
plt.show()
```

In [4]:
```python
import numpy as np
import matplotlib.pyplot  as plt
a=np.array([[1,2,3],[4,5,6]])
plt.plot(a)
plt.plot(a,marker='*',linestyle='dotted')
plt.show()
```

In [7]:
```python
import numpy as np
import matplotlib.pyplot  as plt
a=np.array([[1,2,3],[4,5,6]])
plt.plot(a)
plt.plot(a,marker='*',linestyle='dashed')
plt.show()
```
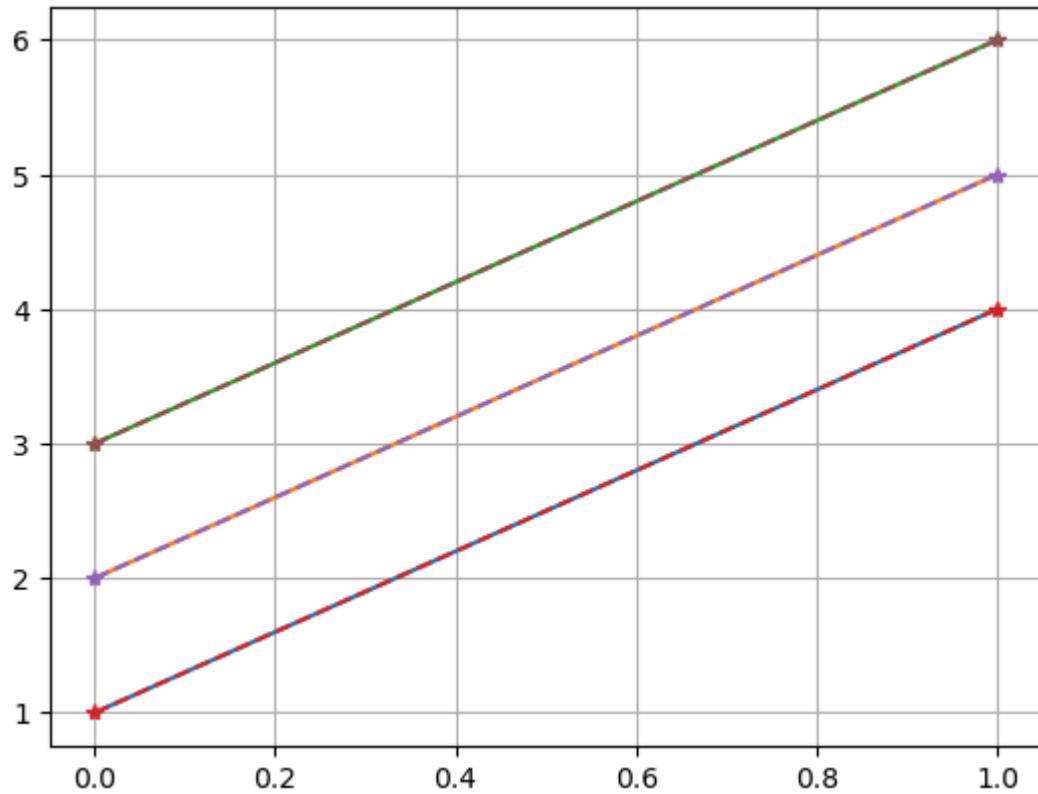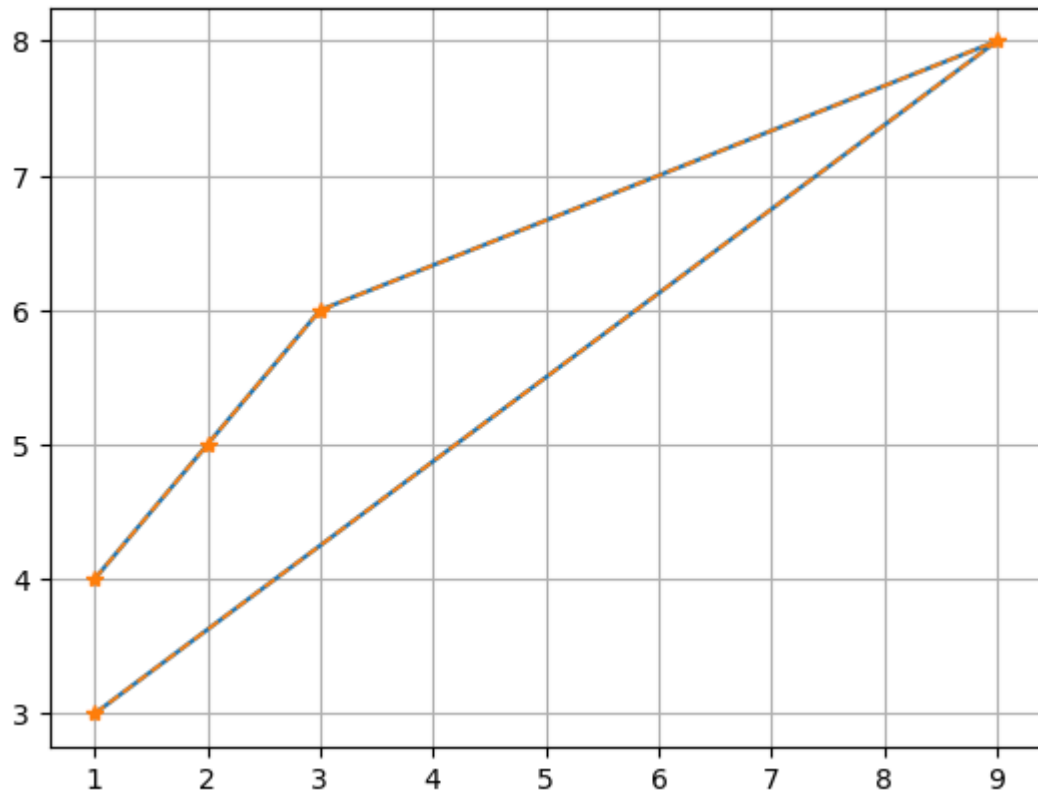
In [9]:
```python
import numpy as np
import matplotlib.pyplot  as plt
a=np.array([[1,2,3],[4,5,6]])
plt.plot(a)
plt.plot(a,marker='*',linestyle='dashed')
plt.grid()
plt.show()
```

In [20]:
```python
import numpy as np
import matplotlib.pyplot  as plt
a=np.array([1,2,3,9,1])
b=np.array([4,5,6,8,3])
plt.plot(a,b)
plt.plot(a,b,marker='*',linestyle='dashed',linewidth='1.2')
plt.grid()
plt.show()
```
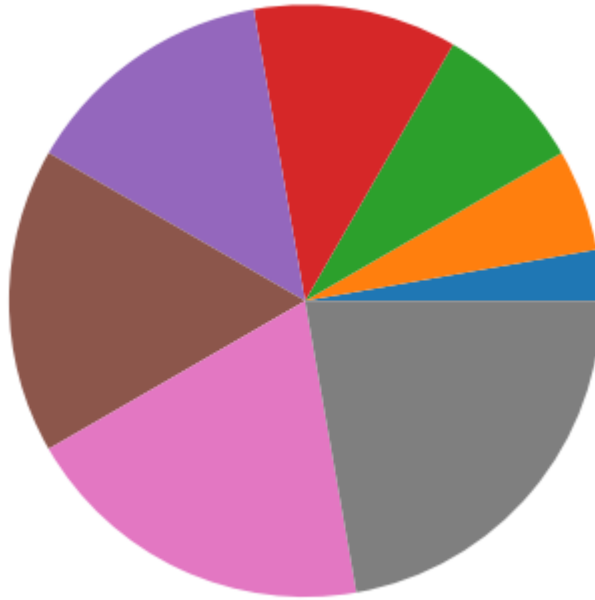
In [26]:
```python
import numpy as np
import matplotlib.pyplot  as plt
a=np.array([1,2,3,4,5])
b=np.array([6,7,8,9,5])
plt.pie(a,b)
```

Out[26]: ([<matplotlib.patches.Wedge at 0x1f60378a590>,
   <matplotlib.patches.Wedge at 0x1f60378b110>,
   <matplotlib.patches.Wedge at 0x1f60378be90>,
   <matplotlib.patches.Wedge at 0x1f603794f90>,
   <matplotlib.patches.Wedge at 0x1f603795ed0>],
 [Text(6.944847949085602, 1.4761730806655105, ''),
   Text(5.419957648501001, 6.0194733231783255, ''),
   Text(-2.81205529705479, 8.654614087659027, ''),
   Text(-9.879290498714326, -2.0999093413794903, ''),
   Text(3.050001071648902, -5.282754344368149, '')])

In [62]:
```python
import numpy as np
import matplotlib.pyplot  as plt
a=[1,2,3,4,5,6,7,8]
plt.pie(a)
plt.show()
```

In [42]:
```python
import numpy as np
import matplotlib.pyplot  as plt
a=np.array([1,2,3])
b=np.random.normal(4,5,6)
plt.hist(b)
plt.grid()
plt.show()
```
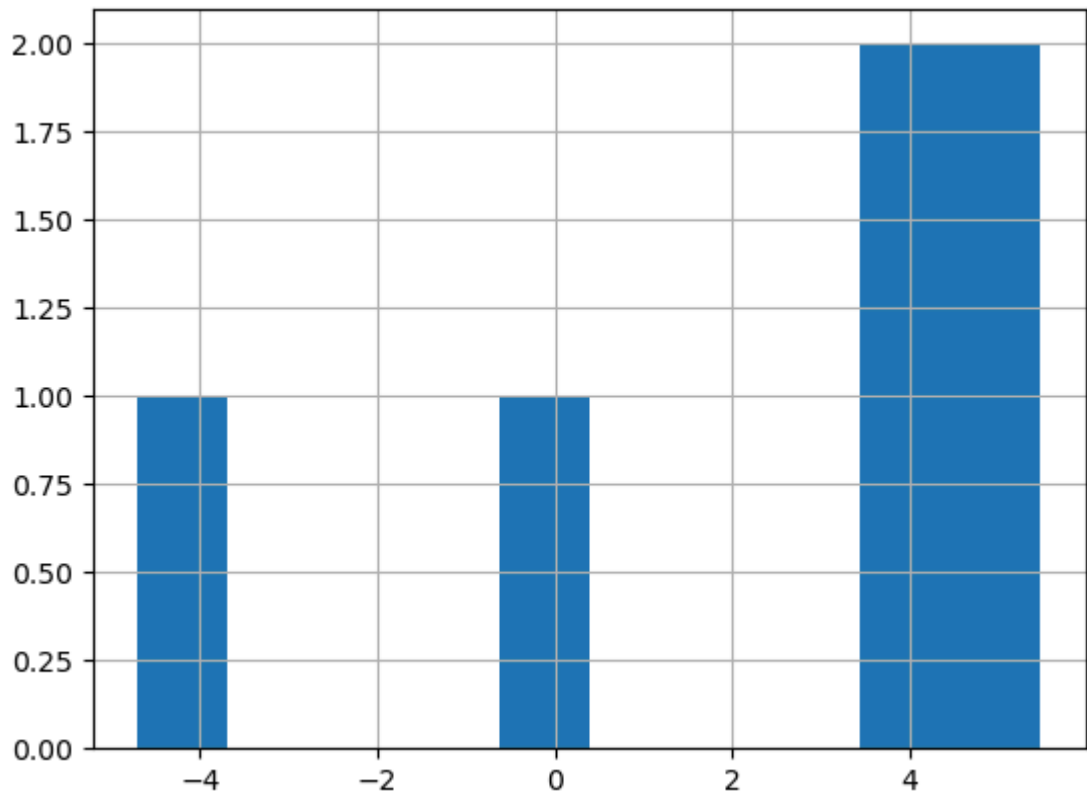

In [53]:
```python
import numpy as np
import matplotlib.pyplot  as plt
a=open('thar.txt','w')
a.write("welcome to 4x4")
a.close()
```

In [59]:
```python
import numpy as np
import matplotlib.pyplot  as plt
b=open('thar.txt','r')
b.read()
print(b.read())
b.close()
```

In [60]:
```python
import json
a='{"Name":"dong","Age":25,"city":"che"}'
b=json.loads(a)
print(b)
c=json.dumps(a)
print(c)
```

```
{'Name': 'dong', 'Age': 25, 'city': 'che'}
"{\"Name\":\"dong\",\"Age\":25,\"city\":\"che\"}"
```

In [4]:
```python
import numpy as np
import pandas as pd
df=pd.DataFrame(np.random.randn(5,3),index=['a','c','e','f','h'],columns=['
```

In [5]:
```python
df=df.reindex(['a','b','c','d','e','f','g','h'])
```

In [6]:
```python
print(df)
```
```
        one       two     three
a -0.395018 -1.322920 -0.130106
b      NaN       NaN       NaN
c  0.004442  0.530101  0.227556
d      NaN       NaN       NaN
e  0.069140  2.300813  0.313007
f -0.221391  0.283378  0.669214
g      NaN       NaN       NaN
h -0.641772 -0.410923 -0.094023
```

In [8]:
```python
df1=df
```

In [9]:
```python
print(df1)
```
```
        one       two     three
a -0.395018 -1.322920 -0.130106
b      NaN       NaN       NaN
c  0.004442  0.530101  0.227556
d      NaN       NaN       NaN
e  0.069140  2.300813  0.313007
f -0.221391  0.283378  0.669214
g      NaN       NaN       NaN
h -0.641772 -0.410923 -0.094023
```

In [10]:
```python
print(df.dropna())
```
```
        one       two     three
a -0.395018 -1.322920 -0.130106
c  0.004442  0.530101  0.227556
e  0.069140  2.300813  0.313007
f -0.221391  0.283378  0.669214
h -0.641772 -0.410923 -0.094023
```

In [11]:
```python
df2=df1
```

In [12]:
```python
print(df1.fillna(0))
```
```
        one       two     three
a -0.395018 -1.322920 -0.130106
b  0.000000  0.000000  0.000000
c  0.004442  0.530101  0.227556
d  0.000000  0.000000  0.000000
e  0.069140  2.300813  0.313007
f -0.221391  0.283378  0.669214
g  0.000000  0.000000  0.000000
h -0.641772 -0.410923 -0.094023
```

In [13]:
```python
print(df2.fillna(method='pad'))
```

```
        one       two     three
a -0.395018 -1.322920 -0.130106
b -0.395018 -1.322920 -0.130106
c  0.004442  0.530101  0.227556
d  0.004442  0.530101  0.227556
e  0.069140  2.300813  0.313007
f -0.221391  0.283378  0.669214
g -0.221391  0.283378  0.669214
h -0.641772 -0.410923 -0.094023
```

In [15]:
```python
df3=df2
```

In [16]:
```python
print(df['one'])
```

```
a    -0.395018
b          NaN
c     0.004442
d          NaN
e     0.069140
f    -0.221391
g          NaN
h    -0.641772
Name: one, dtype: float64
```

In [19]:
```python
print(df['one'].isnull())
```

```
a    False
b     True
c    False
d     True
e    False
f    False
g     True
h    False
Name: one, dtype: bool
```

In [21]:
```python
print(df1['one'].notnull())
```

```
a     True
b    False
c     True
d    False
e     True
f     True
g    False
h     True
Name: one, dtype: bool
```

In [ ]:

In [ ]:
```python
import numpy as np
import pandas as pd
```