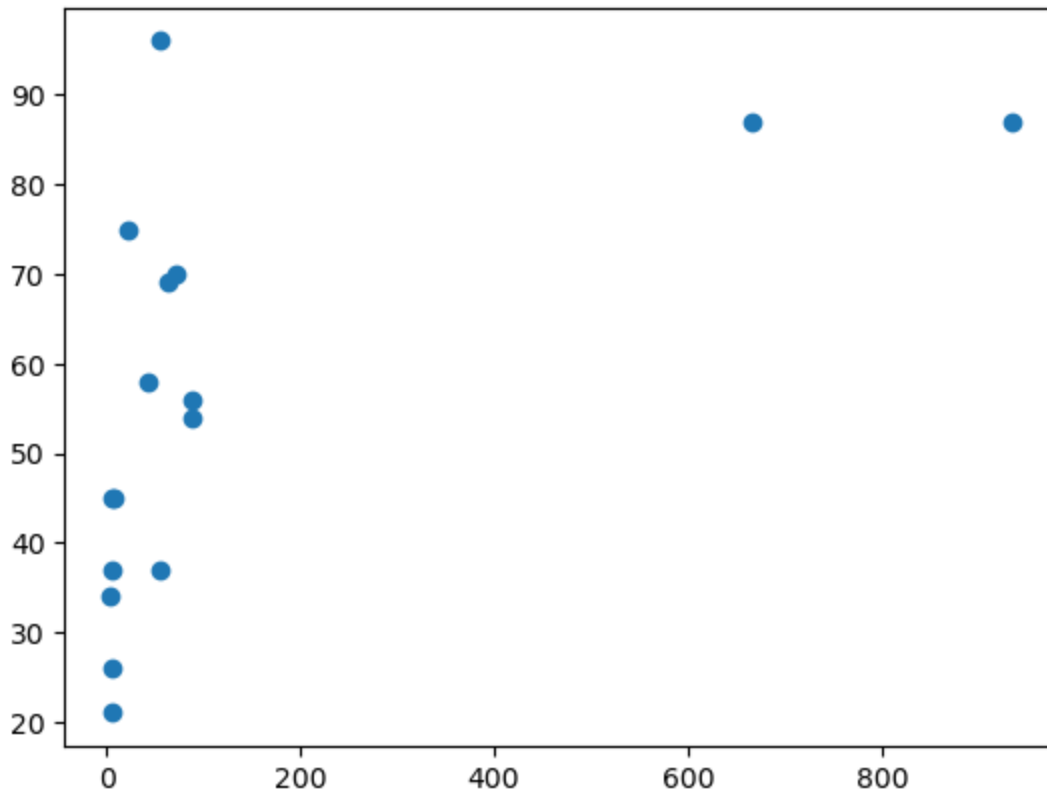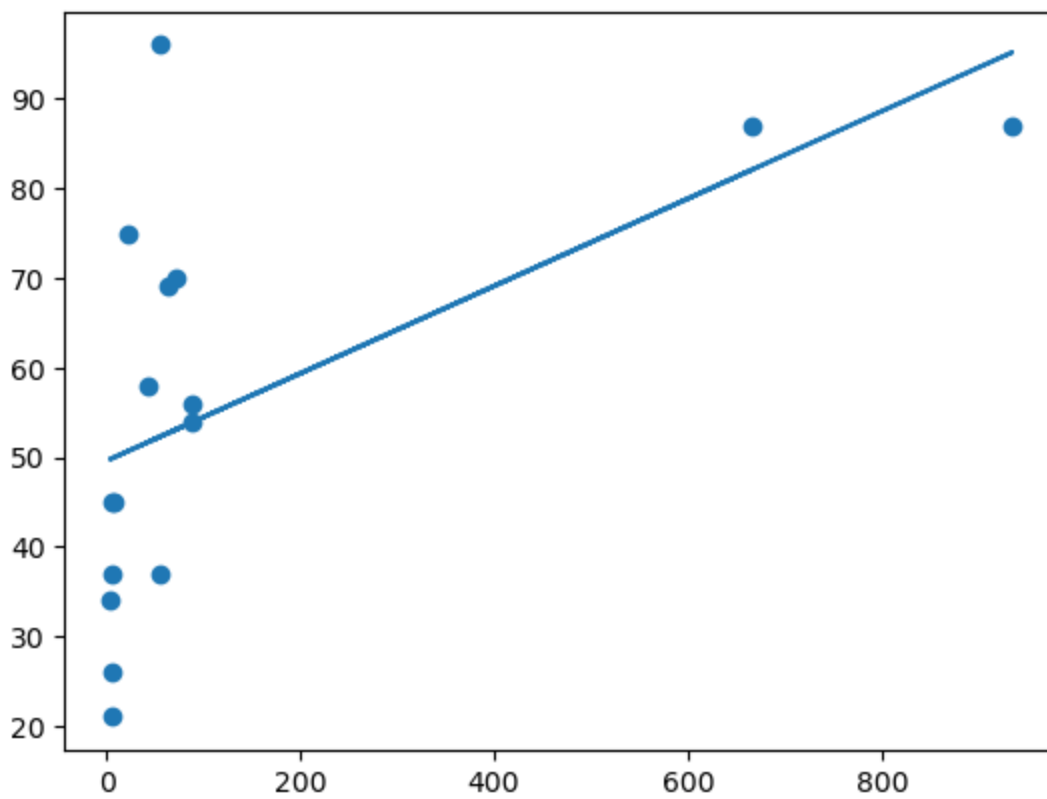```
In [2]: #strat by drawing a scatterplot
         import matplotlib.pyplot as plt
         x=[5,6,7,8,934,56,89,23,4,5,667,89,56,43,64,73]
         y=[45,37,21,45,87,96,54,75,34,26,87,56,37,58,69,70]
         plt.scatter(x,y)
         plt.show()
```



```
In [9]: #import scipy and draw the line of linear regresion
         import matplotlib.pyplot as plt
         from scipy import stats
         x=[5,6,7,8,934,56,89,23,4,5,667,89,56,43,64,73]
         y=[45,37,21,45,87,96,54,75,34,26,87,56,37,58,69,70]
         slope,intercept,r,p,std_err=stats.linregress(x,y)
         def myfunc(x):
             return slope*x+intercept
         mymodel=list(map(myfunc,x))
         plt.scatter(x,y)
         plt.plot(x,mymodel)
         plt.show()
```

```
In [14]: #predict the speed of 10 year old car
          from scipy import stats
          import matplotlib.pyplot as plt
          x=[5,6,7,8,934,56,89,23,4,5,667,89,56,43,64,73]
          y=[45,37,21,45,87,96,54,75,34,26,87,56,37,58,69,70]
          slope,intercept,r,p,std_err=stats.linregress(x,y)
          def myfunc(x):
              return slope*x+intercept
          speed=myfunc(10)
          print(speed)
          plt.scatter(x,y)
          plt.plot(x,mymodel)
          plt.show()
```

50.05586383973542
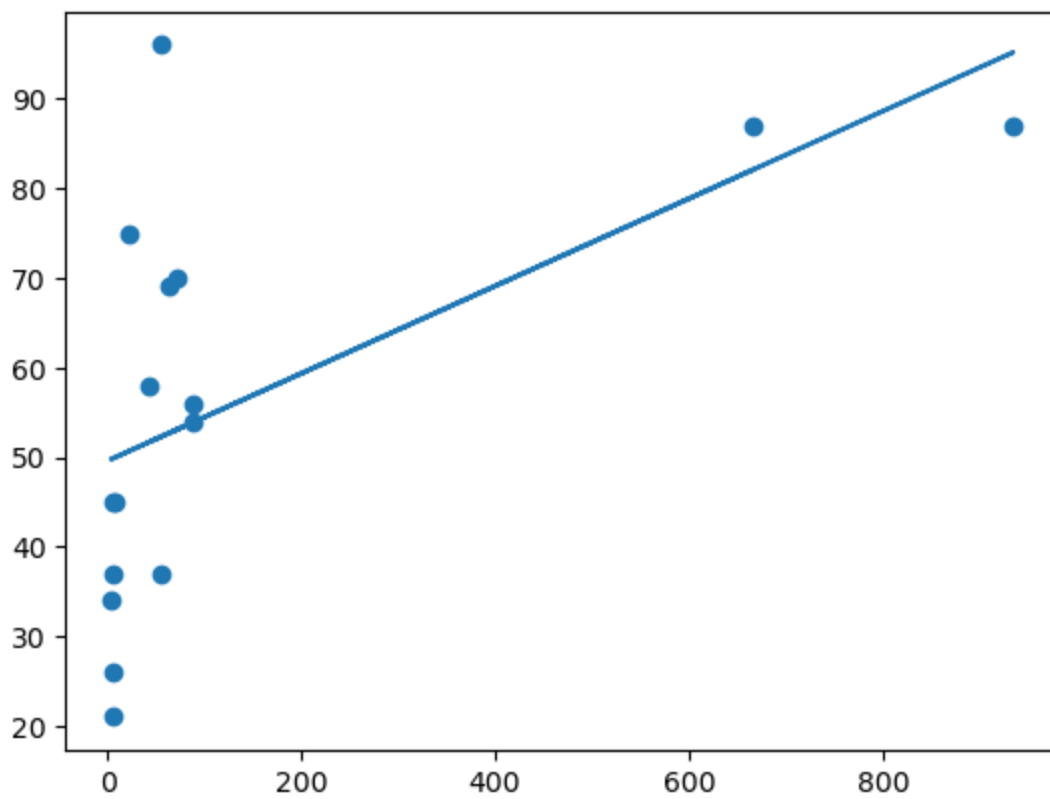
In [17]:
```python
#polynomial regresion
import numpy
import matplotlib.pyplot as plt
x=[34,45,56,67,8,90,23,54,64,73,83,95,34,67,96]
y=[3,5,6,79,43,65,87,34,25,76,97,35,65,14,36]
mymodel=numpy.poly1d(numpy.polyfit(x,y,3))
myline=numpy.linspace(34,96,36)
plt.scatter(x,y)
plt.plot(myline,mymodel(myline))
plt.show()
```
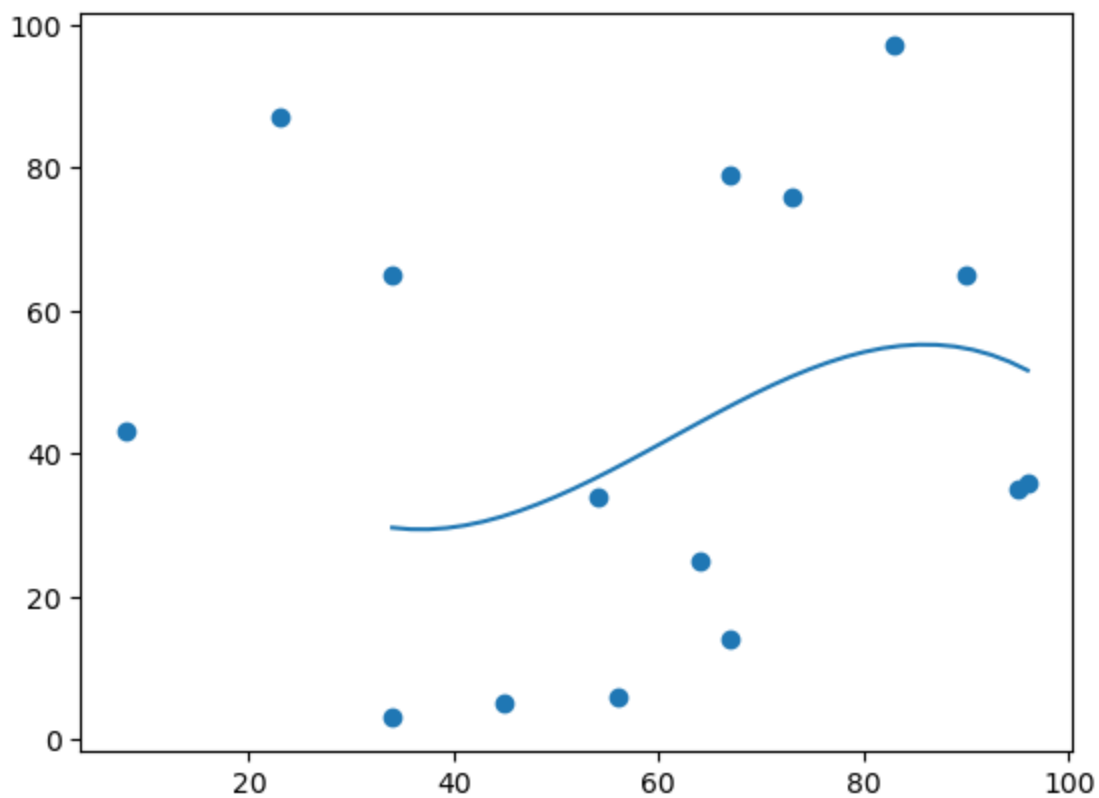
```
In [20]: import numpy
         from sklearn.metrics import r2_score
         x=[5,6,7,8,934,56,89,23,4,5,667,89,56,43,64,73]
         y=[45,37,21,45,87,96,54,75,34,26,87,56,37,58,69,70]
         mymodel=numpy.poly1d(numpy.polyfit(x,y,3))
         print(r2_score(y,mymodel(x)))
```

0.5150853034231584

```
In [ ]:
```