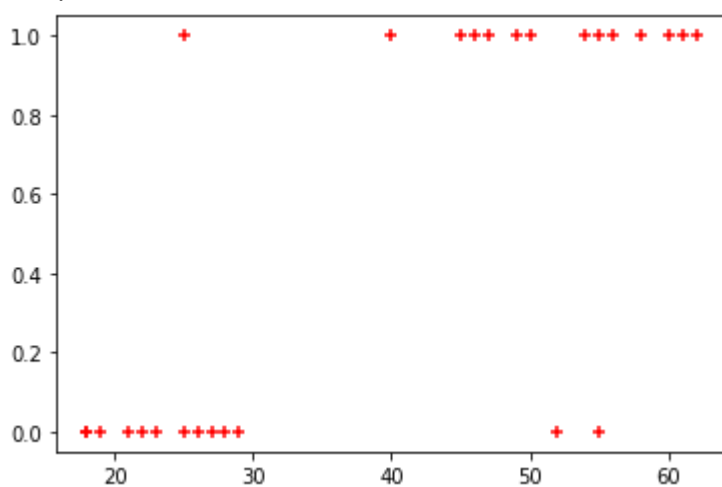```python
import pandas as pd
from matplotlib import pyplot as plt
%matplotlib inline
```

```python
df = pd.read_csv("/content/drive/MyDrive/Colab Notebooks/insurance_data.csv")
df.head()
```

	age	bought_insurance
0	22	0
1	25	0
2	47	1
3	52	0
4	46	1

```python
plt.scatter(df.age,df.bought_insurance,marker='+',color='red')
```

```
<matplotlib.collections.PathCollection at 0x7ff180b213d0>
```



```python
from sklearn.model_selection import train_test_split
```

```python
X_train, X_test, y_train, y_test = train_test_split(df[['age']],df.bought_insurance,train_siz
```

```python
X_test
```

	age
9	61
24	50
16	25

```
from sklearn.linear_model import LogisticRegression
model = LogisticRegression()
```

```
model.fit(X_train, y_train)
```

```
LogisticRegression(C=1.0, class_weight=None, dual=False, fit_intercept=True,
                   intercept_scaling=1, l1_ratio=None, max_iter=100,
                   multi_class='auto', n_jobs=None, penalty='l2',
                   random_state=None, solver='lbfgs', tol=0.0001, verbose=0,
                   warm_start=False)
```

```
X_test
```

	age
9	61
3	52
23	45
8	62
2	47
18	19

```
y_predicted = model.predict(X_test)
```

```
model.predict_proba(X_test)
```

```
array([[0.03212766, 0.96787234],
       [0.1110703 , 0.8889297 ],
       [0.25943856, 0.74056144],
       [0.02785037, 0.97214963],
       [0.20694321, 0.79305679],
       [0.94160822, 0.05839178]])
```

```
model.score(X_test,y_test)
```

```
0.8333333333333334
```

```
y_predicted
```

```
array([1, 1, 1, 1, 1, 0])
```

X_test

	age
9	61
24	50
16	25
19	18
17	58
18	19

```
model.coef_
```

```
array([[0.14728088]])
```

```
model.intercept_
```

```
array([-5.57875091])
```

```
import math
def sigmoid(x):
  return 1 / (1 + math.exp(-x))
```

```
def prediction_function(age):
    z = 0.042 * age - 1.53 # 0.04150133 ~ 0.042 and -1.52726963 ~ -1.53
    y = sigmoid(z)
    return y
```

```
age = 35
prediction_function(age)
```

```
0.4850044983805899
```

```
age = 43
prediction_function(age)
```

```
0.568565299077705
```

✓ 0s completed at 16:30 ● ✕