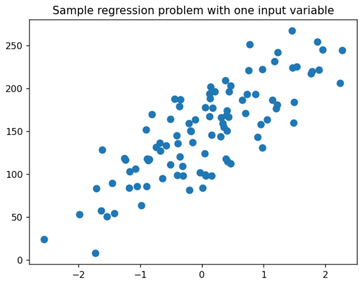
In [1]:
```
%matplotlib notebook
import numpy as np
import pandas as pd
import seaborn as sn
import matplotlib.pyplot as plt
from sklearn.datasets import make_classification, make_blobs
from matplotlib.colors import ListedColormap
from sklearn.datasets import load_breast_cancer
from sklearn.datasets import make_friedman1
from sklearn.datasets import make_regression

cmap_bold = ListedColormap(['#FFFF00', '#00FF00', '#0000FF','#000000'])
```

simple regression

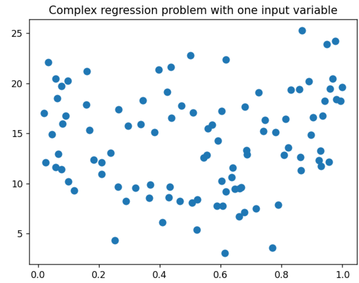
In [2]:
```
plt.figure()
plt.title('Sample regression problem with one input variable')
X_R1, y_R1 = make_regression(n_samples = 100, n_features=1,
                             n_informative=1, bias = 150.0,
                             noise = 30, random_state=0)
plt.scatter(X_R1, y_R1, marker= 'o', s=50)
plt.show()
```



complex regression

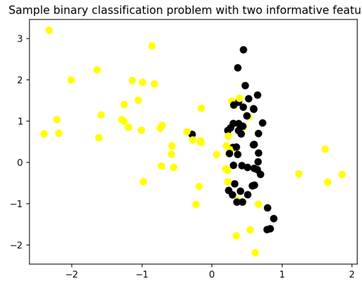
In [3]:
```
plt.figure()
plt.title('Complex regression problem with one input variable')
X_F1, y_F1 = make_friedman1(n_samples = 100,
                            n_features = 7, random_state=0)

plt.scatter(X_F1[:, 2], y_F1, marker= 'o', s=50)
plt.show()
```



Binary classification

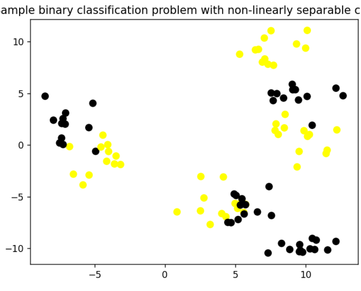
In [4]:
```
plt.figure()
plt.title('Sample binary classification problem with two informative features')
X_C2, y_C2 = make_classification(n_samples = 100, n_features=2,
                                 n_redundant=0, n_informative=2,
                                 n_clusters_per_class=1, flip_y = 0.1,
                                 class_sep = 0.5, random_state=0)
plt.scatter(X_C2[:, 0], X_C2[:, 1], c=y_C2,
            marker= 'o', s=50, cmap=cmap_bold)
plt.show()
```



Binary classification, not linearly separable

In [5]:
```
X_D2, y_D2 = make_blobs(n_samples = 100, n_features = 2, centers = 8,
                        cluster_std = 1.3, random_state = 4)

y_D2 = y_D2 % 2
plt.figure()
plt.title('Sample binary classification problem with non-linearly separable classes')
plt.scatter(X_D2[:,0], X_D2[:,1], c=y_D2,
            marker= 'o', s=50, cmap=cmap_bold)
plt.show()
```



Binary Classification of Breast cancer dataset

In [6]:
```
cancer = load_breast_cancer()
(X_cancer, y_cancer) = load_breast_cancer(return_X_y = True)
plt.figure()
plt.title('Breast cancer dataset for classification')
plt.scatter(X_cancer[:,0], X_cancer[:,1], c=y_cancer,
            marker= 'o', s=50, cmap=cmap_bold)
plt.show()
```