```python
from sklearn.datasets import make_moons
import matplotlib.pyplot as plt
import numpy as np
from matplotlib.colors import ListedColormap
from sklearn.inspection import DecisionBoundaryDisplay
from sklearn.neighbors import KNeighborsClassifier
from sklearn.linear_model import LogisticRegression


#####################################################
# create datasets
#####################################################
X, y = make_moons(noise=0.2, random_state=0, n_samples=400)
x_min, x_max = X[:, 0].min() - 0.5, X[:, 0].max() + 0.5
y_min, y_max = X[:, 1].min() - 0.5, X[:, 1].max() + 0.5



#####################################################
# plot datasets
#####################################################
figure = plt.figure(figsize=(27, 9))

cm = plt.cm.RdBu
cm_bright = ListedColormap(["#FF0000", "#0000FF"])
ax = plt.subplot(1, 2 + 1, 1)
ax.scatter(X[:, 0], X[:, 1], c=y, cmap=cm_bright, edgecolors="k")
ax.set_xlim(x_min, x_max)
ax.set_ylim(y_min, y_max)
ax.set_xticks(())
ax.set_yticks(())
ax.set_title("Scatter Plots", fontsize=20)



#####################################################
# plot decision boundary for K-nearest neighbors
#####################################################
ax = plt.subplot(1, 2 + 1, 2)

clf = KNeighborsClassifier(3)
clf.fit(X, y)

DecisionBoundaryDisplay.from_estimator(
    clf, X, cmap=cm, alpha=0.8, ax=ax, eps=0.5
)
ax.scatter(X[:, 0], X[:, 1], c=y, cmap=cm_bright, edgecolors="k")
ax.set_xlim(x_min, x_max)
ax.set_ylim(y_min, y_max)
ax.set_xticks(())
ax.set_yticks(())

ax.set_title("K Nearest Neighbors", fontsize=20)

#####################################################
# plot decision boundary for logistic regression
#####################################################
ax = plt.subplot(1, 2 + 1, 3)

clf = LogisticRegression(random_state=0)
clf.fit(X, y)

DecisionBoundaryDisplay.from_estimator(
    clf, X, cmap=cm, alpha=0.8, ax=ax, eps=0.5
)
ax.scatter(X[:, 0], X[:, 1], c=y, cmap=cm_bright, edgecolors="k")
ax.set_xlim(x_min, x_max)
ax.set_ylim(y_min, y_max)
ax.set_xticks(())
ax.set_yticks(())
ax.set_title("Logistic Regression", fontsize=20)


plt.savefig("moons.pdf", bbox_inches='tight')
```

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