```
import numpy as np
import matplotlib.pyplot as plt
```

```
x = np.array([-3, -2, -1, 0, 1, 2, 3])
y = np.array([-66, -22, -4, 0, 2, 14, 48])

n = len(x)

sum_x = np.sum(x)
sum_y = np.sum(y)
sum_xy = np.sum(x * y)
sum_x2 = np.sum(x**2)

m = (n * sum_xy - sum_x * sum_y) / (n * sum_x2 - sum_x**2)
c = (sum_y - m * sum_x) / n

print(f"The equation of the best-fit line is y = {m:.2f}x + {c:.2f}")

x_pred = 1.5
y_pred = m * x_pred + c

print(f"The estimated value of y at x = {x_pred} is {y_pred:.2f}")
```

```
The equation of the best-fit line is y = 15.00x + -4.00
The estimated value of y at x = 1.5 is 18.50
```

```
plt.scatter(x, y, label="Data points")
plt.plot(x, m*x + c, color='red', label=f'Regression line: y = {m:.2f}x + {c:.2f}')
plt.scatter(x_pred, y_pred, marker='x', color='k', label=f'Predicted point: ({x_pred}, {y_pred:.2f})')

plt.xlabel("x")
plt.ylabel("y")
plt.title("Linear Regression and Prediction")

plt.legend()
plt.grid()
plt.axvline(color='k',ls='--')
plt.axhline(color='k',ls='--')

plt.show()
```