1. Import Libraries

0s

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

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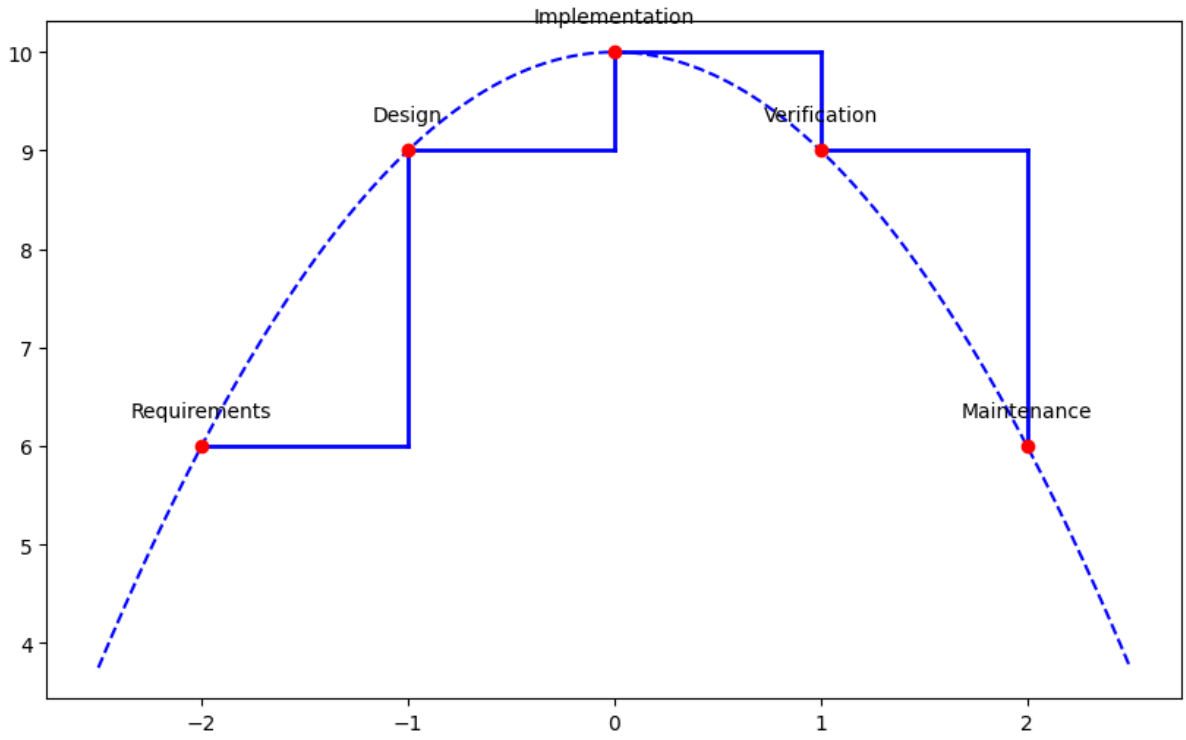
```
def quadratic(x, a=-1, b=0, c=10):
    return a * x**2 + b * x + c
```

```
stages = ["Requirements", "Design", "Implementation", "Verification", "Maintenance"]

# Generate equally spaced x positions
x_positions = np.linspace(-2, 2, len(stages))

# Compute y positions using the quadratic function
y_positions = quadratic(x_positions)  # Assuming quadratic function is defined elsewhere

# Plot the quadratic curve
x_curve = np.linspace(-2.5, 2.5, 500)
y_curve = quadratic(x_curve)

plt.figure(figsize=(10, 6))
plt.plot(x_curve, y_curve, color="blue", linestyle="--", label="Quadratic Curve")

# Add markers and connect them with vertical lines to create the waterfall effect
for i in range(len(stages)):
    if i > 0:
        # Draw a vertical drop to simulate a waterfall
        plt.plot([x_positions[i - 1], x_positions[i]], [y_positions[i - 1], y_positions[i - 1]], color="blue", linewidth=2)  # Horizontal segment
        plt.plot([x_positions[i], x_positions[i]], [y_positions[i - 1], y_positions[i]], color="blue", linewidth=2)  # Vertical drop

    # Place markers and labels
    plt.scatter(x_positions[i], y_positions[i], color="red", zorder=5)
    plt.text(x_positions[i], y_positions[i] + 0.3, stages[i], ha="center", fontsize=10)
```




```
plt.plot(x_curve, y_curve, linestyle="--", color="green", label="Quadratic Curve")
plt.title("Model Representation Using Quadratic Curve", fontsize=12)
plt.xlabel("Stages of the Waterfall Model", fontsize=12)
plt.ylabel("Value", fontsize=12)
plt.axhline(0, color="black", linewidth=0.5, linestyle="--", alpha=0.7)
plt.axvline(0, color="black", linewidth=0.5, linestyle="--", alpha=0.7)
plt.grid(color="gray", linestyle="--", linewidth=0.5, alpha=0.7)
plt.legend()
plt.show()
```