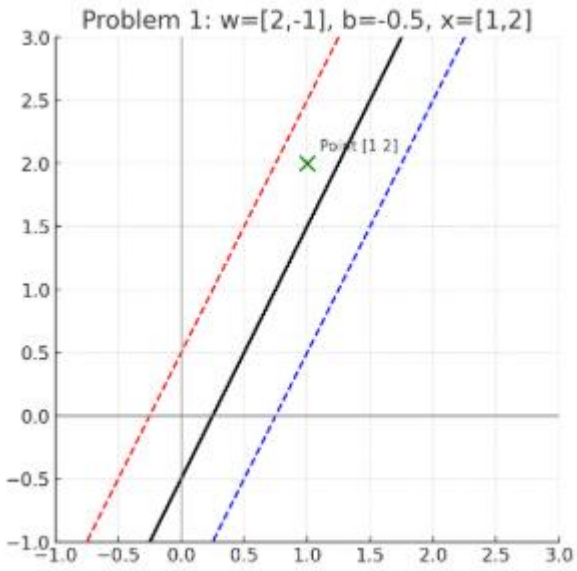
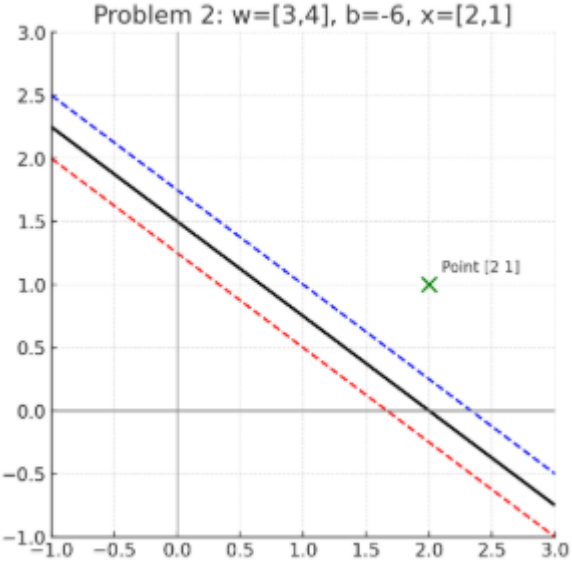
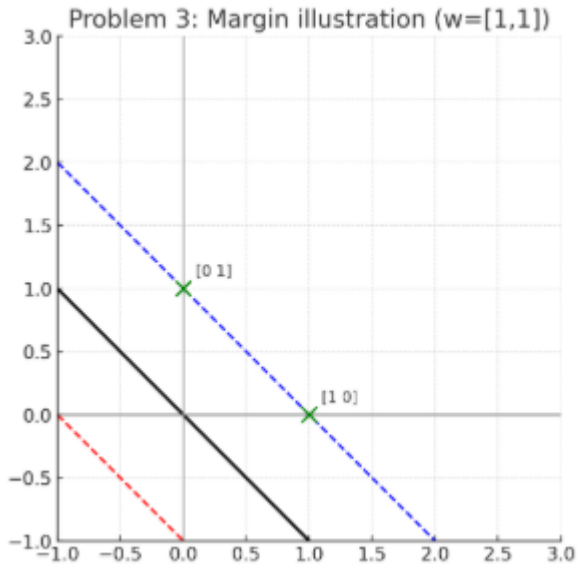
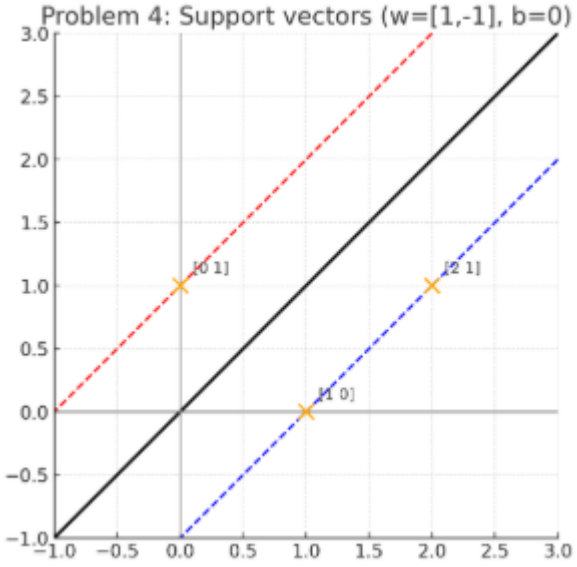




Visualizations for **Problem 1** and **Problem 2**, showing the decision boundary (black), margins (blue/red dashed), and the given point (green).





Here are the diagrams for **Problem 3** (margin illustration) and **Problem 4** (support vectors), showing the decision boundary in black, margins in blue/red dashed lines, and the points in green or orange.

Solve the following exercises onn SVMs?

Formula:

$$f(x) = w^T x + b$$

Questions:

1. Given $w = [3, 1]$, $b = -2$, $x = [1, 4]$, compute $f(x)$ and classify the point.
2. Given $w = [-2, 5]$, $b = 1$, $x = [2, 0]$, compute $f(x)$ and classify the point.
3. Given $w = [1, 2]$, $b = 0.5$, $x = [-1, 1]$, compute $f(x)$ and classify the point.
4. Given $w = [2, -3]$, $b = 1$, $x = [0, 1]$, compute $f(x)$ and classify the point.
5. Given $w = [0.5, -0.5]$, $b = 0$, $x = [2, 2]$, compute $f(x)$ and classify the point.
