Quiz #7
MTH 351/651: Fall 2025
Instructor: John Gemmer

Key

Problem 1. Consider the following system of differential equations:

$$\dot{x} = v,$$
$$\dot{v} = -\frac{dV}{dx},$$

where $V(x)$ is plotted below. Below the graph of $V(x)$, sketch a phase portrait of this system. In your phase portrait, sketch all qualitatively different trajectories, label any equilibria, and clearly indicate any heteroclinic or homoclinic orbits.