

## 1 Fall 2017: Problem 9

9. (a) 0.01: Weight trajectory: (d) , Objective: (g)

**Explanation:** For the smallest step size, we see the slowest convergence to the optimum, which corresponds to slowest moving trajectory (d) and the slowly decreasing objective plot (g).

- (b) 0.05: Weight trajectory: (a) , Objective: (h)

**Explanation:** As the step size increases, speed of convergence increases, as seen in trajectory (a) and objective plot (h).

- (c) 0.50: Weight trajectory: (c) , Objective: (f)

**Explanation:** Convergence is even faster in trajectory (c), though we start seeing some oscillation. The objective plot is the most sharply decreasing plot (f).

- (d) 1.00: Weight trajectory: (b) , Objective: (e)

**Explanation:** The step size has increased too much, and our weights and objective diverge. This is seen in (b) and (e).