**Instructions:** Make sure your questions and answers are on different pages. Do not include your name or any other identifying information. I will know that information from Canvas.

**Question 1:** What is gradient descent and how/when does it work?

**Question 2:** What is the learning rate in gradient descent?

**Question 3:** How do convex functions/strongly convex objectives relate to gradient descent?

**Answer Question 1:** Gradient descent is a type of optimization in machine learning models which works by setting parameters to a value and decreasing the value of risk iteratively, and finding a gradient descent that is very close to 0.

**Answer Question 2:** Learning rate in gradient descent is a small value that allows for progress to be made incrementally in each iteration of the optimization process.

**Answer Question 3:** Convex functions are those that if a line segment is drawn between any two points in the graph of the function, that line segment will lie above the function, and for strongly convex functions, gradient descent with a constant step size converges exponentially quickly to the optimum which is also known as convergence at a linear rate.