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: Give an example of a loss function used for the following traditional machine learning tasks: classification problems, regression problems, and unsupervised learning.

Question 2: What are the two main tasks that deep learning is used for?

Question 3: Why do we need to understand different loss functions?

Answer Question 1:
Classifcation problem: 0–1 loss, Perceptron loss, Logarithmic loss, Exponential loss, Sigmoid cross entropy loss, Softmax cross entropy loss, Hinge loss, Ramp loss, Pinball loss, Truncated pinball loss, or Rescaled hinge loss

Regression problem: Square loss, Absolute loss, Huber loss, Log-cosh loss, Quantile loss, or $\in$-insensitive loss

Unsupervised learning: Square error, Distance error, Reconstruction error, or Negative variance

Answer Question 2: Object Detection and Face Recognition

Answer Question 3: Loss functions are important because they impact the machine learning algorithm's performance. It is important to understand the different loss functions out there so that we can quickly select the correct loss function for our algorithm.