Quiz 8   **Name:** _____
Week 14, Dec./7/2022   **Student ID:** _____
CS 280: Fall 2022   **On your left:** _____
Instructor: Lan Xu   **On your right:** _____

Instructions:
Please answer the questions below. Show all your work. This is an open-book test. NO discussion/collaboration is allowed.

Problem 1. (10 points) *VAE and GAN.* Please describe the difference and connection between VAE and GAN from the aspect of generative model, and provide some detailed examples.

Problem 2. (10 points) *Evaluation of GAN*

1. (a) What's the discriminator and generator loss curve like for a DCGAN if it is well trained? (b) If the loss for the discriminator has gone to zero or close to zero while the loss of the generator also rise and continue to rise over the same period, what's the possible reason? (c) If the DCGAN converges, does it means that it must be a well trained GAN? If not, what will the generator output in such a state?

2. List two widely adopted quantitative evaluation metrics for GAN, give their equations (and explain the meaning of the variables you used), what does a high or low score mean?