Pop Quiz (Week 2) [7 mins]

Name:_____________________________________________________________________

Student ID: ____________________________________________________________________

1. [2] An audio signal has a bandwidth of 150 Hz. How many samples do you need to sample it correctly?
   300 samples

2. [2] Consider a 8-bit grayscale image I(x, y) whose size is 256 × 256. Each column of the image has the same gray value which starts from 0 for the left most column and increases by 1 as we sweep from left to right. Describe the shape the height field of this image forms in one word.

   Plane

3. [1] If the number of bits is reduced, the quantization error is increased

4. [3] Draw a four pixel kernel that will take an image as input and output as image which has a quarter dimmed ghost to its bottom right. Make sure that the total energy is preserved.

   [4/5, 0; 0,1/5]