

Show **all** of your work on this assignment and answer each question fully in the given context.

*Please* staple your assignment!!

1. Create the following Venn Diagram by labelling the values in each section

- 150 people at a Iowa State Band concert were asked if they knew how to play piano, drums or guitar.
- 18 people could play none of these instruments.
- 10 people could play all three of these instruments.
- 77 people could play drums or guitar but could not play piano.
- 73 people could play guitar.
- 49 people could play at least two of these instruments.
- 13 people could play piano and guitar but could not play drums.
- 21 people could play piano and drums.

2. Let  $X$  be a random variable with the probability function given by

$$f(x) = \frac{3^x e^{-3}}{x!}$$

for  $x = 0, 1, 2, 3, \dots$  and 0 otherwise. Find the expected value of  $X$  and plot the probability function.

3. Let  $X$  be a random variable with the probability function given by

$$f(x) = (.3)^x \cdot (.7)^{1-x}$$

for  $x = 0, 1$  and 0 otherwise. Find the expected value and variance of  $X$ .