ECE451 Homework #3

1. Draw the schematics for the following functions using NOR gates and inverters only
   a. $\overline{\overline{X}+\left(\overline{Y+Z}\right)}$
   b. $\overline{\left(\overline{\overline{X}+\overline{Y}}\right)+\left(\overline{\overline{X}+\overline{Z}}\right)}$

2. Draw the schematics for the following functions using NAND gate and inverters only
   a. $\overline{X\left(\overline{Y}\,\overline{Z}\right)}$
   b. $XY+XZ$

3. Prove the following simplification theorems using the first eight laws of Boolean algebra
   a. $\left(X+Y\right)\left(X+\overline{Y}\right)=X$
   b. $X\left(X+Y\right)=X$
   c. $\left(X+\overline{Y}\right)Y=XY$
   d. $\left(X+Y\right)\left(\overline{X}+Z\right)=XZ+\overline{X}Y$