(1) Assume that consumer demand is

$$Q^d = a - b \cdot P, \qquad a,b > 0$$

while the supply from a competitive industry is

$$Q^s = d \cdot P \qquad d > 0$$

Government introduces a tax on sale of Q at the percent rate *t*.

a. derive the change in industry sale from the tax.

b. derive the impact on consumers and the producing industry.

c. what is approximate impact on national welfare?

(2) A consumer has a utility function $u(x,y,z)=\min\{x,y\}+z$. The prices of the three goods are given by (p_x,p_y,p_z) and the money the consumer has to spend is given by m.

a. It runs out that this utility function can be written in the form $U(V(x,y),z)$. What is the function $U(V,z)$?

b. What are the demand functions for the three goods?

c. What is the indirect utility function?