Problem Set #1

ECON 427: Mathematical Economics

(**due next class**)

1. Given the sets $S\_{1}=\left\{2,4,6\right\}, S\_{2}=\left\{7,2,6\right\}, S\_{3}=\left\{4,2,6\right\},$ and $S\_{4}=\{2,4\}$, which of the following statements are true? **Explain your answer. An answer with no explanation will receive in zero credit.**

a) $S\_{1}=S\_{3}$ b) $S\_{1}⊃S\_{4}$ c) $S\_{4}⊂R$

d) $3\notin S\_{2}$

2. Referring to the sets in problem #1, find:

a) $S\_{2}∩S\_{3}$ b) $S\_{3}∪S\_{1}∪S\_{4}$

3. Find the equilibrium conditions $P^{\*}$ and $Q^{\*}$ for the following systems of supply and demand equations. **Graph your results**.

a) $Q\_{d}=30-2P ; Q\_{s}=-6+5P$

b) $Q\_{d}=8-P^{2} ; Q\_{s}=P^{2}-2$

4. Which of the following are functions and why? Assume that *x* is the independent variable and *y* the dependent variable. **Explain your answer. An answer with no explanation will receive zero credit.**

a) $y^{2}+x=16x$ b) $y=-x^{2}+6x+15$ c) $x=4$