Solution to Quiz

Q1

(a) Social benifit curve:

$$\sum_i P_i = 760 - 4Q$$

Cost: 200

Efficient: marginal benifit = magical cost

$760 - 4Q = 200 \Rightarrow Q^E = 140$

(b) Market demand

$$\sum_i Q_i = \underbrace{(200 - P)}_{Q_1} + \underbrace{(240 - P)}_{Q_2} + \underbrace{(160 - \tfrac{1}{2}P)}_{Q_3} = 600 - 2.5P$$

$P = 600 \times \frac{2}{5} - Q \times \frac{2}{5} = 240 - 0.4Q$ (Demand Curve)

$P = 200$ (Supply curve)

$Q^* = 100$

(c) When TV becomes club good. when $P = 200$

$Q_1 = 0$

$Q_2 = 40$

$Q_3 = 60$

$\max\{Q_1, Q_2, Q_3\} = 60$

Q2

Traffic light: cost: 50,000 (50K)

benifit: 0.45% × 10,000 K = 45 K.

cost > benifit.

Stop signs: cost: 5 K

benifit: 0.054% × 10,000 K = 5.4 K

benifit > cost

The mayor should install the stop signs.

Q3.

(a) private good: helmet (excludable and rival in consumption)

(b) public good: mural on the outside door (not excludable and not rival)

(c) common resource: fire-protection service (not excludable, rival in consumption)