3)

a) $\eta = \frac{\Delta Q}{\Delta P} = \frac{\Delta Q}{\frac{2.2 - 1.8}{2}} = \frac{\Delta Q}{0.2}$

short run $\eta_D = 0.2$ long run $\eta_D = 0.7$

$\eta_D = \frac{\Delta Q}{\Delta P}$ $\eta_D = \frac{\Delta Q}{\Delta P}$

$0.2 = \frac{\Delta Q}{0.2}$ $0.7 = \frac{\Delta Q}{0.2}$

$\Delta Q = 0.04$ $\Delta Q = 0.14$

b) cause the time horizon will change the way people live and want like the gasoline that the demand will fall in the future cause people change to EV car.

7)

a) income 20,000 $\eta_D = \frac{\Delta Q}{\Delta P} = \frac{\frac{40 - 32}{36}}{\frac{8 - 10}{9}} = \frac{0.22}{0.22} = -1$

income 29000 $\eta_D = \frac{\Delta Q}{\Delta P} = \frac{\frac{50 - 45}{47.5}}{\frac{8 - 10}{9}} = \frac{0.16}{0.22} = -0.73$

b) price 12 Income elasticity $= \frac{\Delta D}{\Delta \text{income}}$

$= \frac{\frac{30 - 24}{27}}{\frac{29000 - 20000}{22000}} = \frac{0.22}{0.18} = 1.22$

price 16 Income elasticity $= \frac{\Delta D}{\Delta \text{income}}$

$= \frac{\frac{12 - 8}{10}}{\frac{29000 - 20000}{22000}} = \frac{0.4}{0.18} = 2.22$