

3. (a) price rises : $\frac{(2.20 - 1.80)}{2.00} : 0.2 : 20\%$

Short run (price elasticity of demand : 0.2)

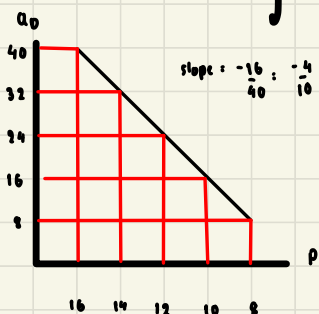
Q_D decreases by $0.2 \times 0.2 : 0.04 : 4\%$

Long run (price elasticity of demand : 0.7)

Q_D decreases by $0.7 \times 0.2 : 0.14 : 14\%$

(b) In the short run, consumers don't have other heating resources so elasticity is less than long run that consumers can install other heating resources like natural gas.

7.



slope : $-\frac{16}{40} : -\frac{4}{10}$

(i) midpoint method : $\frac{\frac{\Delta Q}{Q}}{\frac{\Delta P}{P}} = \frac{\frac{40 - 32}{36}}{\frac{16 - 10}{9}} = -8/2 \cdot 9/16$
 $\eta_D : -1$

(ii) $\eta_D : -5/2 \cdot 9/47.5 : -0.473$

$$(b) \quad \eta_{\text{income}} : \frac{\% \Delta Q_D}{\% \Delta \text{income}} : \frac{30 - 24 / 24}{24000 - 20000 / 20000}$$

$$: \frac{1/4}{1/5} : 5/4 = 1.2$$

$$\eta_{\text{income}} : \frac{\% \Delta Q_D}{\% \Delta \text{income}} : \frac{12 - 8 / 8}{24000 - 20000 / 20000}$$

$$: \frac{1/2}{1/5} : 2.5$$