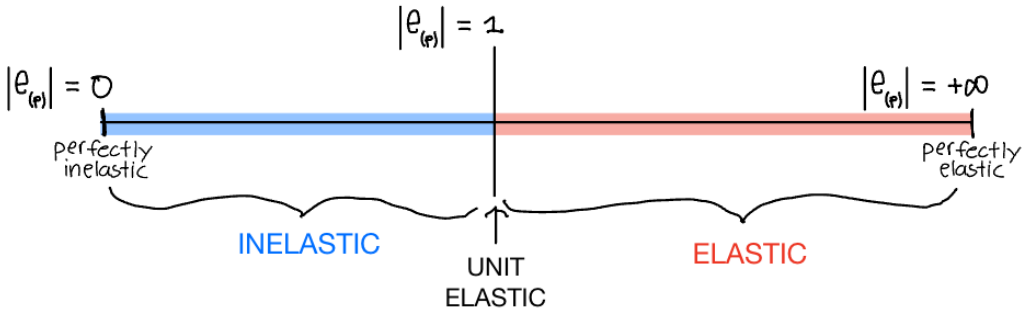
$$Q_x^D = \alpha + \underbrace{\frac{\partial Q_x^D}{\partial P_x}}_{\text{own-price elasticity}} P_x + \underbrace{\frac{\partial Q_x^D}{\partial P_y}}_{\text{cross-price elasticity}} P_y + \underbrace{\frac{\partial Q_x^D}{\partial Y}}_{\text{income elasticity}} Y$$

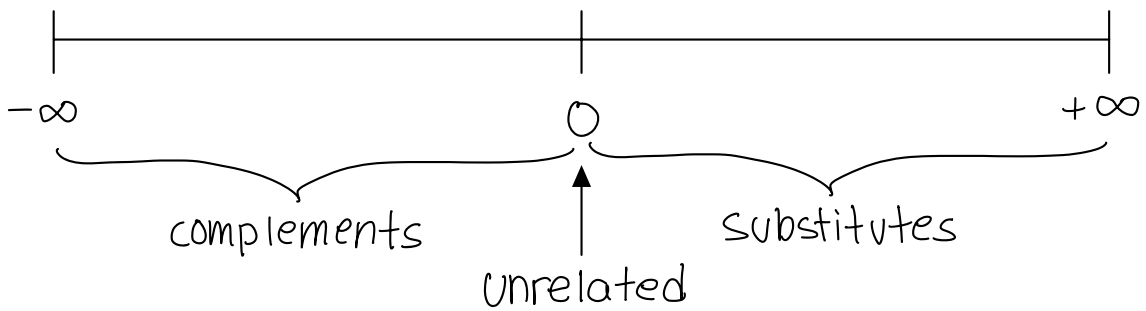
own-price elasticity of demand:

$$e_{(P)} = \frac{\%\Delta Q}{\%\Delta P} \overset{\text{midpoint method}}{=} \frac{\frac{Q_2 - Q_1}{\left[\frac{Q_1 + Q_2}{2}\right]}}{\frac{P_2 - P_1}{\left[\frac{P_1 + P_2}{2}\right]}}$$



cross-price elasticity of demand:

$$E_{xy} = \frac{\%\Delta Q_x}{\%\Delta P_y} = \frac{\Delta Q_x}{\Delta P_y} * \frac{P_y}{Q_x}$$



income elasticity of demand: