1. Please answer the following questions:
(1) Harry claims that the two equations \( x_1 + (x_2)^{1/2} = 10 \) and \( x_1^2 + 2x_1(x_2)^{1/2} + x_2 = 100 \) are both valid indifference curves for him, can this be correct? (5 points)

(2) John’s Marginal Rate of Substitution in Consumption is \( MRSc = y/x \). The market prices are \( p_x = 5 \) and \( p_y = 1 \). What is the equation of his Income Expansion Path? (5 points)

(3) Mary always spends exactly half his income in foods. What can you say about his income elasticity and price elasticity for food? (5 points)

2. In a perfectly competitive market, industry demand is given by \( Q = 1000 - 20P \). The typical firm’s average cost is \( AC = 300/Q + Q/3 \).
(1) Find the minimal efficient scale (MES) for the typical firm. (5 points)

(2) Suppose ten firms serve the market. Find both the individual firm’s supply curve and the market supply curve. (5 points)

(3) Find the market equilibrium price and equilibrium quantity. (5 points)

(4) What is the typical firm’s profit? (5 points)

(5) Determine the long-run, zero-profit equilibrium. How many firms serve the market? (5 points)

3. Two firms produce differentiated products. Firm 1 faces the demand curve: \( Q_1 = 75 - P_1 + 0.5P_2 \). Firm 2 faces the analogous demand curve: \( Q_2 = 75 - P_2 + 0.5P_1 \). For each firm \( AC = MC = 30 \). Suppose firm 1 and firm 2 are in a Bertrand duopoly world.

(1) Find the optimal price reaction function for both firm 1 and firm 2. (5 points)

(2) In equilibrium, the firms set identical prices: \( P_1 = P_2 \). Find the firms’ equilibrium prices, quantities, and profits. (5 points)
4. 從一個國家各部門支出面來看，國內生產總額（GDP）是由消費支出(C)、投資(I)、政府消費支出(G)及淨出口(出口(X)-進口(M))所組成，即GDP=C+I+G+(X-M)。請以此公式，IS-LM模型與總和需求曲線(AD)和總和供給曲線(AS)，利用文字敘述或圖形解釋下列問題：

(一)

1. 我國已採用低利率政策多年，雖物價仍屬平緩，但經濟表現仍不佳（如2013年GDP成長率確定低於3%），內需市場動力不足且出口甚至衰退。可是國內房地產價格仍持續上漲，造成國民財富分配不均情況日益嚴重，請說明。（15%）

2. 若你(妳)是國家經濟政策掌舵者，你(妳)應如何做，才可能解決此問題？（10%）

(二)

1. 中國大陸近年GDP年成長率已從快速成長階段(成長率超過10%)轉成中度成長(成長率約7~8%)，但整個國家仍存在高貸利率、房地產價格飆漲，以及錢荒等現象，請說明。（15%）

2. 若你(妳)是中國國家經濟政策掌舵者，你(妳)應如何做，才可能解決此問題？（10%）