Problem 1: Inside money

\[ t = 1,2 \]
\[ l = 1 \]
\[ h = 1, \ldots, n \]

Define notation.

a) Show that the competitive equilibrium allocation \( x = (x_1, \ldots, x_h, \ldots, x_n) \) for the money market economy is the same as the competitive equilibrium allocation in the futures market economy.

b) Why is the allocation independent of \( p^m \) if \( p^m > 0 \)? Give the full economic intuition for the case \( p^m > 0 \).

c) Give the full economic intuition of the case \( p^m = 0 \)
Problem 2: Outside Money, static economy

\[ \omega = (\omega_1, \omega_2, \omega_3, \omega_4, \omega_5, \omega_6, \omega_7) \]
\[ = (100, 90, 80, 70, 60, 50, 40) \]

Solve the following for \( P^m \), the set of equilibrium money prices \( P^m \).

a) \( \tau = (5, 4, 1, 0, -1, -4, -5) \)

b) \( \tau = (5, 3, 0, 0, -1, -2, -3) \)

c) \( \tau = (1, 1, 1, 0, -1, -1, -1) \)

d) \( \tau = (3, 2, 1, 0, -1, -1, -2) \)
Problem 3: Two currencies.

Red dollars, \( R \).
Blue dollars, \( B \).
\( \omega = (10, 9, 8, 7, 6) \)

Solve for exchange rates. Show units.

a) \( \tau^R = (5, 4, 0, -5, -5) \)
\( \tau^B = (1, 1, 1, 0, 0) \)

b) \( \tau^R = (1, 1, 1, 1, 1) \)
\( \tau^B = (1, 1, -1, -1, -1) \)

c) \( \tau^R = (2, -1, -1, -1, -1) \)
\( \tau^B = (-1, 2, 2, 2, 2) \)

d) \( \tau^R = (5, 0, 0, 0, -5) \)
\( \tau^B = (1, -1, 0, 0, 0) \)

e) Why are the exchange rates independent of \( \omega \)?