**Problem 4**

Assume CU = 0 and the required reserve ratio = 10%

The demand for money is \( M^d = PY(0.8 - 4i) \) with \( P = 1 \)

The monetary base \( H = \$100 \) billion and \( Y = \$5 \) trillion

a. What is the demand for \( H \)

\[ H^d = 0.1PY(0.8 - 4i) \]

b. Calculate the equilibrium interest rate (use the supply and demand for \( H \))

\[ 100 = 500(0.8 - 4i) \]

\[ i = 0.15 \text{ or } 15\% \]

c. What is the supply of money in the economy? \( mm = M/H \)

\[ 100 \times 10 = 1000 \text{ or } 1 \text{ trillion} \] (the money multiplier \( mm \) is \( 1/\text{reserve ratio} \) or \( 1/0.1 = 10 \))

d. Now use the supply and demand for money in the economy to calculate the equilibrium rate of interest in the economy.

\[ 1 \text{ trillion} = 5 \text{ (trillion)} (0.8 - 4i) \]

\[ i = 0.15 \text{ or } 15\% \]

Hopefully, you get the same equilibrium interest rate!

e. What happens to the interest rate is the Fed increases \( H \) to \$300 \) billion. It will drop

Calculate it

\[ 300 = 500 (0.8 - 4i) \]

\[ i = 0.05 \text{ or } 5\% \]

f. Starting from the original equations, calculate the new interest rate is the money supply in the economy increases to \$3000 \) billion (or 3 trillion).

\[ 3 \text{ trillion} = 5 \text{ (trillion)} (0.8 - 4i) \]

\[ i = 0.05 \text{ or } 5\% \]