Suppose that you have the following money demand function:

\[
\frac{M^D}{P} = 500 + 0.2Y - 10i
\]

Where \( Y \) is GDP per capita (in thousands), \( i \) is the interest rate as a percentage (i.e. 8% = 8), \( M \) is the M1 money supply in billions and \( P \) is the price level. The money multiplier is currently 4.

a) Suppose that GDP per capita is currently $40,000, the interest rate is currently 5% and the M1 money supply is currently $687B. Calculate the current price level.

b) Suppose that the Fed wanted to lower the interest rate to 4%. Calculate the open market transaction necessary to accomplish this.

c) Continuing from (b), if the Fed is targeting the interest rate at 4% and GDP per capita rises to $50,000, calculate the open market transaction necessary to maintain the target.