1. Consider the following IS-LM model:

\[ C = 1200 + 0.9 \, Y_d \]
\[ I = 0.2 \, Y - 20,000 \, i \]
\[ G = 2000 \]
\[ T = \frac{1}{3} \, Y \]
\[ (M/P)^d = Y - 100,000 \, i \]
\[ M/P = 6000 \]

(a) Derive the equation for the IS curve (it will be easiest if you write this with \( Y \) on the left-hand side and all else on the right-hand side).

(b) Derive the equation for the LM curve (again, put \( Y \) on the left-hand side).

(c) Solve for the equilibrium interest rate (note that 0.01 is 1%).

(d) Solve for equilibrium real output.

(e) Solve for the equilibrium values of \( C \) and \( I \). Verify that your answer for \( Y \) is correct by adding \( C \), \( I \) and \( G \) together.

2. Use the IS and LM curves that you derived for Problem 1 to answer the following.

(a) Calculate the changes in \( Y \) and \( i \) if \( G \) increases by 400. Calculate the change in \( I \). Explain the effects of expansionary fiscal policy using your results to illustrate.

(b) Leave \( G \) equal to 2000 and let \( M/P \) rise by 2000 instead. Find the change in \( Y \) and \( i \) caused by the increase in \( M/P \). Explain the effects of expansionary monetary policy using your results to illustrate.

3. Problem 3, Chapter 5 of Blanchard, p. 106.

4. Use the model of Problem 3 to answer this question.

(a) Use your expression for equilibrium output to show how the effect of an increase in \( G \) on output depends on the parameter \( d_2 \)

(b) An increase in the ratio \( d_2/d_1 \) means that money demand is more sensitive to the interest rate. Use this interpretation to explain the result you found in part (a). Also use an IS-LM diagram to illustrate your answer.

(c) Show how the short-run effect of an increase in \( M \) depends on the parameter \( b_2 \) using your equation and a diagram. Explain why an increase in \( M \) has a larger effect on output if \( b_2 \) is larger.

5. Problem 3, Chapter 6 of Blanchard, p. 131.

6. Problem 8, Chapter 6 of Blanchard, p. 132.