Problem 1 (Sample Midterm 2, Question 2). It is year $t = 0$. Argentina thinks it can find \$150 of domestic investment projects with an MPK of 10%. Argentina invests \$84 in year $t = 0$ by borrowing \$84 from the rest of the world at the world interest rate $r^* = 5\%$. There is no further borrowing or investment. The project starts to pay off in year $t = 1$ and continues to pay off all years thereafter. Interest is paid in perpetuity, in year $t = 1$ and every year thereafter. In addition, assume that if the projects are not done, then GDP $= Q = C =$ \$200 in all years.

For the following questions, use standard assumptions: initial external wealth $W = 0$, $G = 0$ always, $I = 0$ except in year $t = 0$, and NUT $=$ KA $= 0$; and furthermore there is no net labor income so that NFIA $= r^*W$.

(a) If the investment project is not undertaken, what is the present value of output Q?

(b) Should Argentina fund the \$84 worth of projects? Explain your answer.

(c) Why might Argentina be able to borrow only \$84 and not \$150?

(d) Going forward, assume the projects totaling \$84 are funded and completed in year $t = 0$. If the MPK is 10%, what is the total payoff from the projects in future years?

(e) At year $t = 0$, what is the new PV(Q), PV(I), and PV(C)?

(f) Suppose Argentina is consumption smoothing. What is the new level of C?

(g) In year $t = 0$, when the investment project is started (but not yet completed), explain Argentina's balance of payments as follows: state CA, TB, NFIA, and FA.

(h) State the levels of CA, TB, NFIA, and FA in year $t = 1$ and every later year.

Problem 2 (Sample Midterm 2, Question 5). Assume the following functional forms:

Goods Market	Money Market	FX Market
$C = 50 + 0.75(Y - T)$	$M = 1000$	$E^e = 4$
$I = 1600 - 250i$	$L = 0.5Y - 500i$	$i^* = 5\%$
$G = 1200$	$P = 0.5$	
$\text{CA} = -260 - 0.2Y - 100i$		
$T = 1000$		
$\pi^e = 0$		

(a) Derive the equation for the IS curve.

(b) Derive the equation for the LM curve.

(c) Find the MPC, MPC$_F$, MPC$_H$, and MPS for this economy.

(d) Find the equilibrium (home) interest rate i, and the equilibrium (home) output Y.

(e) Compute equilibrium consumption, investment, and the current account.

(f) Compute the level of private, public, and national savings S. Compare I and S: is this consistent with your answer to part (e)?

(g) Compute the economy's exchange rate.

(h) Using an IS/LM/FX diagram, show the effect of an increase in G.