Problem Set #2
Solutions

Chapter 3, # 1

a. According to the neoclassical theory of distribution, the real wage equals the marginal product of labor. Because of diminishing returns to labor, an increase in the labor force causes the marginal product of labor to fall. Hence, the real wage falls.

b. The real rental price equals the marginal product of capital. If an earthquake destroys some of the capital stock (yet miraculously does not kill anyone and lower the labor force), the marginal product of capital rises and, hence, the real rental price rises.

c. If a technological advance improves the production function, this is likely to increase the marginal products of both capital and labor. Hence, the real wage and the real rental price both increase.

d. Inflation would have no effect on any real returns or prices.

Chapter 3, #6

b. According to the neoclassical theory, technical progress that increases the marginal product of farmers causes their real wage to rise. The real wage is measured in terms of farm goods. That is, if the nominal wage is in dollars, then the real wage is in $WF/PF$, where $PF$ is the dollar price of farm goods.

c. If the marginal productivity of barbers is unchanged, then their real wage is unchanged. The real wage is measured in terms of haircuts. That is, if the nominal wage is in dollars, then the real wage is $WH/PH$, where $PH$ is the dollar price of a haircut.

d. If workers can move freely between being farmers and being barbers, then they must be paid the same wage $W$ in each sector.

e. If the nominal wage $W$ is the same in both sectors, but the real wage in terms of farm goods is greater than the real wage in terms of haircuts, then the price of haircuts must have risen relative to the price of farm goods.

f. Both groups benefit from technological progress in farming.
Chapter 3 # 9

If consumers increase the amount that they consume today, private saving and therefore national saving will fall. We know this from the definition of national saving:

\[\text{National Saving} = \text{[Private Saving]} + \text{[Public Saving]}\]
\[= (Y_{\text{bar}} - T_{\text{bar}} - C) + (T_{\text{bar}} - G_{\text{bar}})\]

An increase in consumption decreases private saving, so national saving falls.

The following figure graphs saving and investment as a function of the interest rate. If national saving decreases, the supply curve for loanable funds shifts to the left, thereby raising the real interest rate and reducing investment.