1. Questions 4 and 5 on page 38 of Blanchard

2. This question deals with inadequacies in using the CPI to calculate inflation rates.

   Suppose that a consumer buys two goods in a given year, Mountain Dew (m) and Goat Cheese (g). Also, the consumer has $100 in income (Y).

   Let the price of Mountain Dew be \( p^m \) and the price of a Gateway computer be \( p^g \).

   In the base year, 2001, the consumer’s happiness from consumption is calculated by the function \( m^{0.5} g^{0.5} \). In the second year, 2002, Goat Cheese makers improve their product so that consumer happiness is calculated by the function \( m^{0.5} (2g)^{0.5} \).

   The new happiness function reflects a “quality improvement”, in that a unit of goat cheese is now multiplied by two in the happiness function.

   Finally, in both years consumers choose their level of consumption according to the following functions: \( m = 0.5(Y / p^m) \), \( g = 0.5(Y / p^g) \).

   i. Suppose that in the base year (2001), \( p^m = 2 \), \( p^g = 10 \). How much of each good is consumed in the base year? What is the happiness level of the consumer?

   ii. Suppose that in the next year (2002), \( p^m = 4 \), \( p^g = 10 \). How much of each good is consumed in 2002? What is the happiness level of the consumer?

   iii. Calculate the CPI by determining how much the consumer would need to spend in all years IF the consumer had kept its consumption of \( m \) and \( g \) at the same level as they were in the base year (2001). What is the inflation rate (the percentage change in the CPI) between 2001 and 2002?

   iv. Does inflation necessarily mean consumers are worse off? If there were no quality improvements in the goat cheese industry, would consumers be worse off because of inflation?

   Extra Credit: the Golden Wanka Chocolate Bar (this is optional)

   Show that the demand functions \( m = 0.5(Y / p^m) \), \( g = 0.5(Y / p^g) \) maximize the consumer’s 2001 happiness function \( m^{0.5} g^{0.5} \).