1. WIM (Workouts in Intermediate Microeconomics) 8.1
2. WIM 8.3
3. WIM 8.6

4. Assume that an individual can only consume the two goods she values in whole units (that is, the goods are not divisible). Also assume that an individual chooses among goods in his choice set randomly. If there are \( n \) possible consumption bundles \((x_1, x_2)\) in her choice set, she chooses each with probability \( 1/n \). Imagine a situation in which she is making a new choice of a consumption bundle each day, and that we are interested in her average consumption of \( x_1 \) and \( x_2 \) over a long period of time.

   (a) If she has income \( I = 4 \) and the prices of the two goods are \( p_1 = 2 \) and \( p_2 = 1 \), find her average consumption of \( x_1 \) and \( x_2 \).

   (b) Keeping the prices of the goods fixed, consider her choices when her income is 3 instead of 4. Do both goods appear to be “normal” in the sense that average consumption declines when income declines?

   (c) If \( I = 4 \) and \( p_2 = 1 \), consider the effect of a decrease in the price of good 1 to \( p_1 = 1 \). Compute the change in consumption after the price decrease by comparing average demand for both goods in this case with what you found in Part a.

   (d) Under this choice mechanism, is it possible for \( x_1 \) or \( x_2 \) to be a Giffen good? Explain your answer.

5. WIM 9.8
6. An individual has a utility function given by

\[ u(x, l) = 0.5 \ln x + 0.5 \ln l, \]

where \( x \) is a consumption good purchased in the market that has price 1 and \( l \) denotes leisure. The total amount of time the individual has available in a day to allocate between work and leisure is \( T = 12 \) hours. The individual’s nonlabor income is \( I = 30 \). He can sell his time in the market at the rate of \( w \) per hour.

(a) If the individual’s wage is 10, how much time will he spend in the market?
(b) If the individual’s wage offer is 2, how much time will he spend in the market?
(c) Find the wage \( w^* \) at which he would be indifferent between being out of the market or entering it.
(d) If \( I \) is 0, will the individual always spend some time in the market? Will his labor supply be a function of his wage offer given this particular utility function?