Question 1: Consider two countries, Turkey and Greece. Suppose both produce wine and clothes according to the following unit labor requirements:

	Turkey	Greece
wine	$a_w^T = 4$	$a_w^G = 4$
clothes	$a_c^T = 8$	$a_c^G = 2$

The Turkish labor force is 64, and in Greece it is 32. Furthermore, assume that the representative consumer in both countries has the utility function $U(x_c, x_w) = x_c^{3/5} x_w^{2/5}$.

a) Depict the PPF for both countries and construct the relative supply schedule, carefully labelling your diagrams. Which country has the comparative advantage in which commodity?

b) Derive the relative demand function and depict it in the same diagram as the relative supply from a). What is the equilibrium relative price? Quantify each country's imports and exports.

c) Suppose Turkey's labor force changes. At what level does Turkey start to produce both commodities, whereas Greece remains completely specialized? How much does each country gain from trade in this situation?

Question 2: Consider the Ricardo model of trade. The following information is given:

	North	South
Hightech	$a_{l,H}^N = 1$	$a_{l,H}^S = 10$
Agriculture	$a_{l,A}^N = 2$	$a_{l,A}^S = 4$
labor force	$L^N = 100$	$L^S = 400$

Furthermore, all consumers have preferences as expressed by $U(x_H, x_A) = x_H x_A$.

a) Derive the relative supply schedule and depict it graphically. Make sure to label the axes and provide exact numbers. Which country has the comparative advantage in producing hightech?

b) Determine the free trade equilibrium, i.e. the equilibrium relative price and the quantities of each commodity produced and consumed in both contries. Also, explicitly state the traded quantities.

c) Find the ratio of home to foreign wage under free trade. If migration were possible which way would it go? Determine the free migration labor force allocation across countries.

Question 3: Consider two planets: Mars and Venus. You are given the following information about their labor endowments and their unit labor requirements for the production of food and cars:

	Mars	Venus
labor	$L^M = 120$	$L^V = 90$
food	$a_f^M = 10$	$a_f^V = 3$
cars	$a_c^M = 2$	$a_c^V = 6$

Somewhat surprisingly, both the representative Martian as well as the representative Venusian have the same utility function, namely $U(Q_f, Q_c) = min(Q_f, Q_c)$.

a) Depict the PPF for both planets and label the intercepts as well as the slope (include their exact values, pls). Which planet has the comparative advantage in producing food/cars?

b) Suppose spacecraft have not yet been invented. What will be the quantities produced/consumed and the utility levels obtained under autarky?

c) Now un(wo)manned spacecraft are available to ship goods back and forth between the two planets. Depict the universe's relative supply function (again, pls label and provide numbers). What is the free trade equilibrium relative price? What quantities does each planet produce, how much do they import/export? Who gains from trade?