

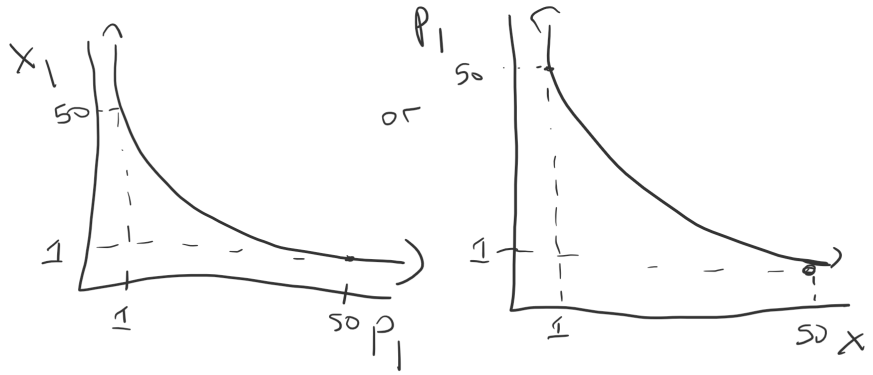
1. A consumer has utility function x_1x_2 .

A) What is the consumers demand for x_1 and x_2 as a function of prices and income.

$$x_1 = \frac{\frac{1}{2}m}{p_1}, x_2 = \frac{\frac{1}{2}m}{p_2}$$

B) Plot the **demand curve** for x_1 when $p_2 = 2$ and $m = 100$.

$$x_1 = \frac{\frac{1}{2}(100)}{p_1} = \frac{50}{p_1}$$



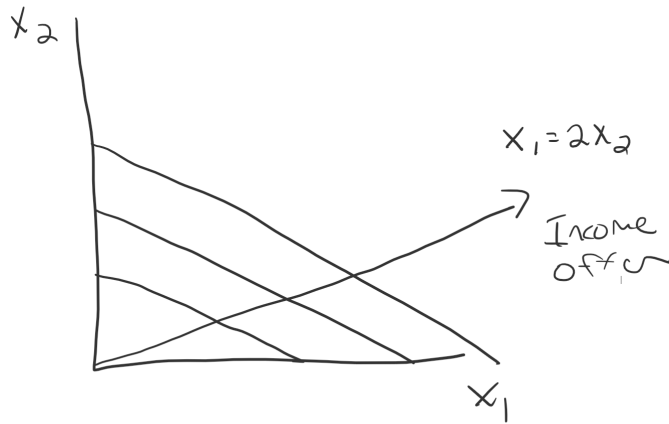
m

C) For $p_1 = 1$ and $p_2 = 2$ sketch the **Engel curve** for x_1 .



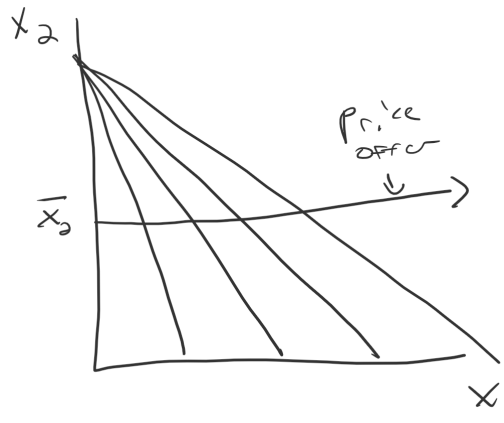
D) For $p_1 = 1$ and $p_2 = 2$ sketch the **Income Offer Curve**.

$$x_1 = \frac{m}{2}, x_2 = \frac{m}{4}$$



E) For $m = 100$ sketch the **price offer curve** for p_1 .

Note here that x_2 does not depend on the price of p_1 . So the price offer curve when we hold p_2 fixed will involve bundles where x_2 is fixed at some level.



2. A consumer has utility function $u(x_1, x_2) = 2x_1 + x_2$.

A. What is the consumer's demand for x_1 and x_2 when $m = 1200$ and $p_1 = 100$ and $p_2 = 100$?

(12, 0)

B. Draw the consumer's budget line for these prices and income **and mark demand** from part A.

See black line below.

C. The price of x_1 increases to $p_1 = 300$. On the graph from part B, **draw the new budget line**.

See red line below.

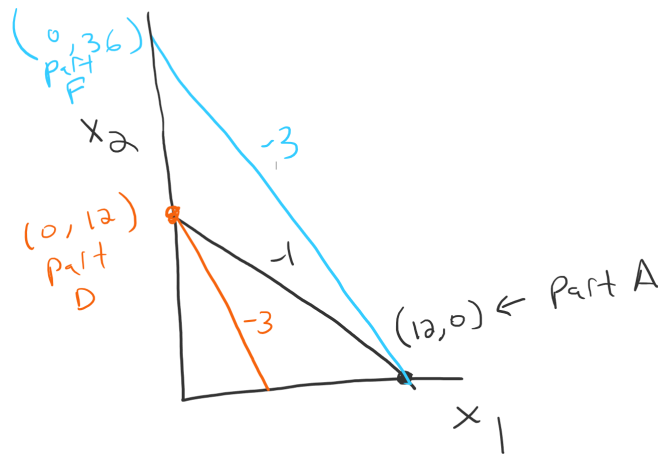
D. What is the new demand for x_1 and x_2 with $p_1 = 300$. Mark this point on your graph.

See graph below.

E. Draw a third budget line on your graph from part B which will allow you to determine substitution and income effects for the change in demand for x_1 after the price change. What is the income and prices on this budget line?

See blue line below. $p_1 = 300, p_2 = 100, m = 3600$

F. What bundle of x_1 and x_2 does the consumer demand under the budget from part E? Label this on your graph.



G. How much of the consumer's change in demand for x_1 between part A and part C is due to **substitution effect**?

All of it (12 units) is due to substitution effect.

H. How much of the consumer's change in demand for x_1 between part A and part C is due to **income effect**?

None of it (0 units) is due to income effect.