

Exercícios sobre demanda

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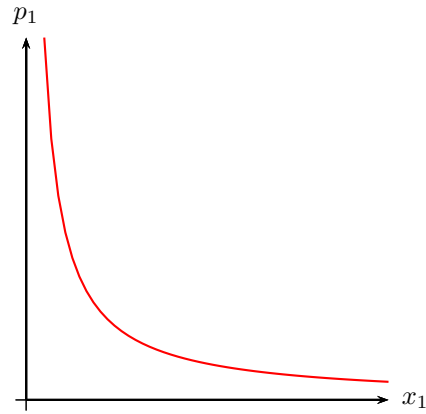
1. Determine as funções de demanda e esboce a curva de demanda e a curva de Engel do bem 1 para as seguintes funções de utilidade:
 - a) $U(x_1, x_2) = \sqrt{x_1} + \sqrt{x_2}$.
 - b) $U(x_1, x_2) = x_1 + \ln x_2$.
 - c) $U(x_1, x_2) = \ln x_1 + x_2$.
 - d) $U(x_1, x_2, x_3) = x_1 \min\{x_2, x_3\}$.
 - e) $U(x_1, x_2, x_3) = x_1(x_2 + x_3)$
 - f) $U(x_1, x_2) = x_1^2 + x_2^2$ (cuidado, verifique se as preferências são convexas).
 - g) $U(x_1, x_2) = \ln x_1 + \sqrt{x_2}$.
 - h) $U(x_1, x_2) = \min\{x_1^2, x_2\}$
 - i) $U(x_1, x_2) = x_1 + x_2^2$
2. Considere o senhor R do último exercício da lista sobre preferências. Caso só existam dois bens o colesterol e o diabético, determine as funções de demanda do senhor R por esses dois bens e esboce a curva de demanda e a curva de Engel do colesterol.
3. Determine as funções de demanda dos bens 1 e 2 com base nas informações do último exercício da lista sobre escolha do consumidor. Esboce a curva de demanda e a curva de Engel do bem 1.

Respostas

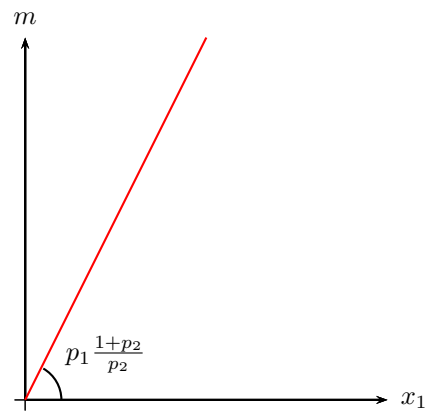
1. a)

$$x_1(p_1, p_2, m) = \frac{p_2}{p_1} \frac{m}{1 + p_2} \quad \text{e} \quad x_2(p_1, p_2, m) = \frac{p_1}{p_2} \frac{m}{1 + p_1}$$

curva de demanda do bem 1:



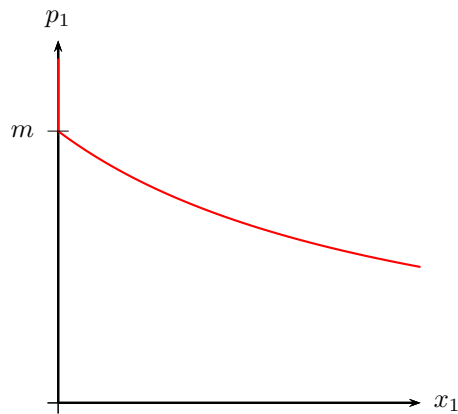
curva de Engel do bem 1:



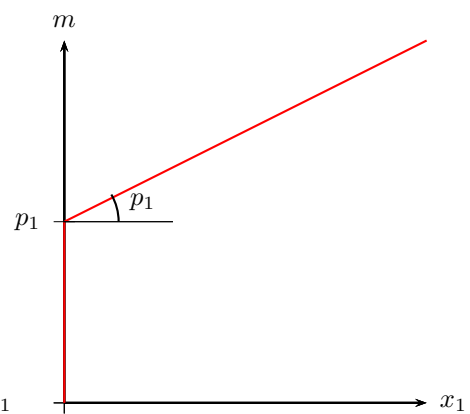
b)

$$x_1(p_1, p_2, m) = \max \left\{ 0, \frac{m}{p_1} - 1 \right\} \quad \text{e} \quad x_2(p_1, p_2, m) = \min \left\{ \frac{p_1}{p_2}, \frac{m}{p_2} \right\}$$

curva de demanda do bem 1:



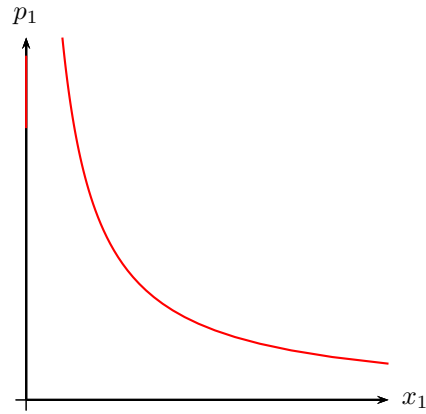
curva de Engel do bem 1:



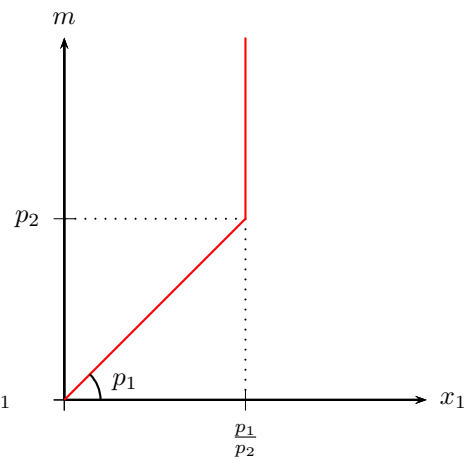
c)

$$x_1(p_1, p_2, m) = \min \left\{ \frac{m}{p_1}, \frac{p_2}{p_1} \right\} \quad \text{e} \quad x_2(p_1, p_2, m) = \min \left\{ \frac{p_1}{p_2}, \frac{m}{p_2} \right\}$$

curva de demanda do bem 1:



curva de Engel do bem 1:



d)

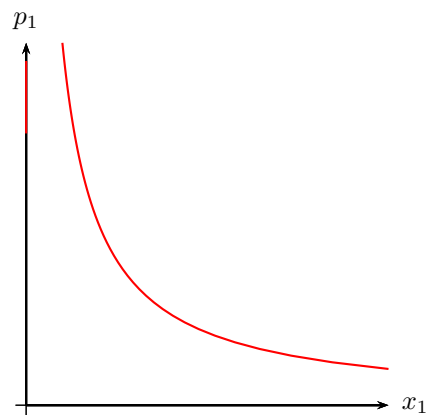
$$x_1(p_1, p_2, p_3, m) = \frac{m}{2p_1},$$

$$x_2(p_1, p_2, p_3, m) = \frac{1}{2} \frac{m}{p_2 + p_3}$$

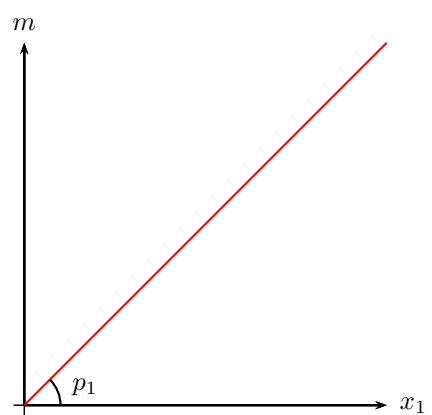
e

$$x_3(p_1, p_2, p_3, m) = \frac{1}{2} \frac{m}{p_2 + p_3}$$

curva de demanda do bem 1:



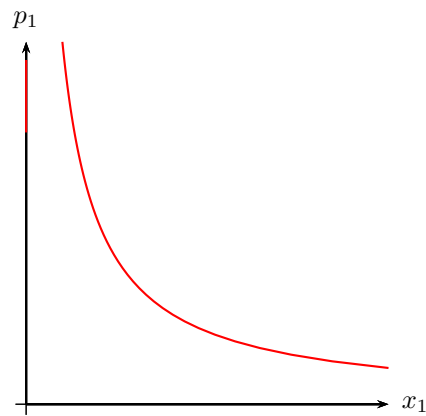
curva de Engel do bem 1:



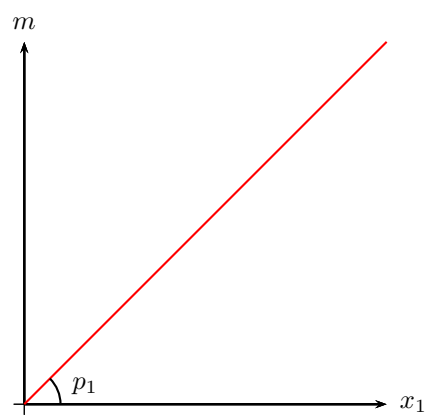
e)

$$[x_1(p_1, p_2, p_3, m), x_2(p_1, p_2, p_3, m), x_3(p_1, p_2, p_3, m)] = \begin{cases} \left(\frac{m}{2p_1}, 0, \frac{m}{2p_3}\right) & \text{caso } p_2 > p_3 \\ \left(\frac{m}{2p_1}, \frac{m}{2p_2}, 0\right) & \text{caso } p_2 < p_3 \\ \left\{ \left(\frac{m}{2p_1}, x_2, x_3\right) \in \mathbb{R}_+^3 : p_2x_2 + p_3x_3 = \frac{m}{2} \right\} & \text{caso } p_2 = p_3 \end{cases}$$

curva de demanda do bem 1:



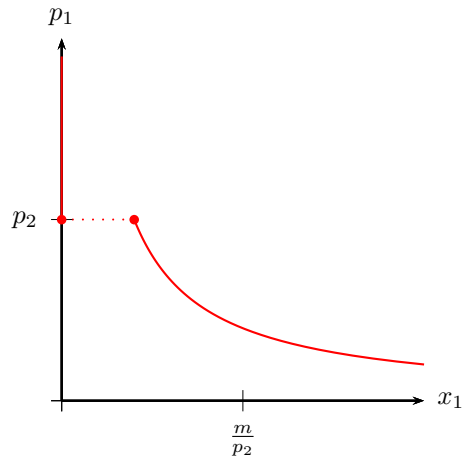
curva de Engel do bem 1:



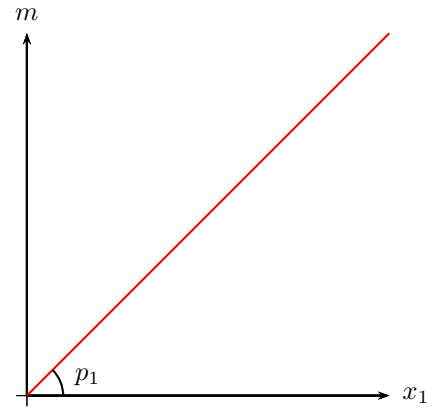
$$[x_1(p_1, p_2, m), x_2(p_1, p_2, m), x_3(p_1, p_2, m)] = \begin{cases} \left(\frac{m}{p_1}, 0\right) & \text{caso } p_1 < p_2 \\ \left(0, \frac{m}{p_2}\right) & \text{caso } p_1 > p_2 \\ \left\{ \left(\frac{m}{p_1}, 0\right), \left(0, \frac{m}{p_2}\right) \right\} & \text{caso } p_1 = p_2 \end{cases}$$

f)

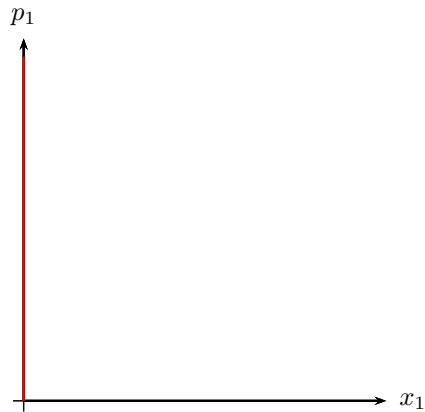
curva de demanda do bem 1:



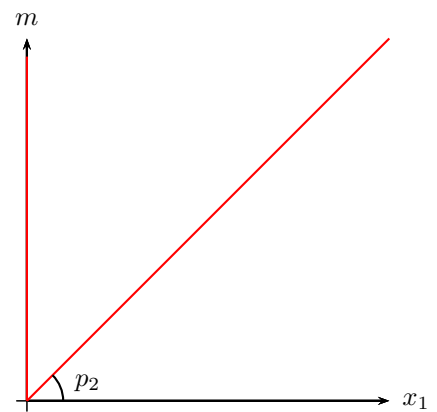
curva de Engel do bem 1 ($p_1 < p_2$):



curva de Engle do bem 1 ($p_1 > p_2$):



curva de Engel do bem 1 ($p_1 = p_2$):

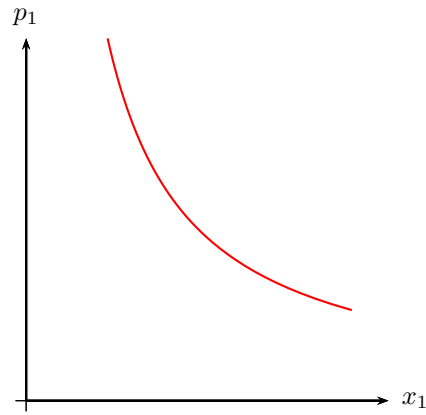


g)

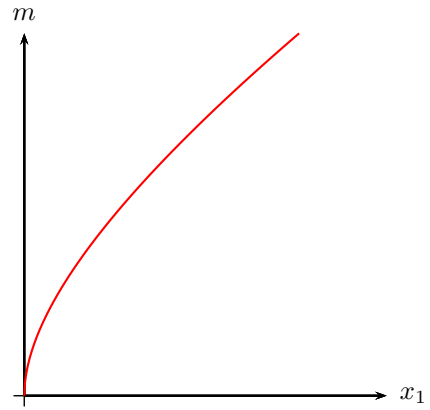
$$x_1(p_1, p_2, p_3, m) = \frac{2p_2}{p_1} \left[\sqrt{1 + \frac{m}{p_2}} - 1 \right]$$

$$x_2(p_1, p_2, p_3, m) = \left[\sqrt{1 + \frac{m}{p_2}} - 1 \right]^2$$

curva de demanda do bem 1:



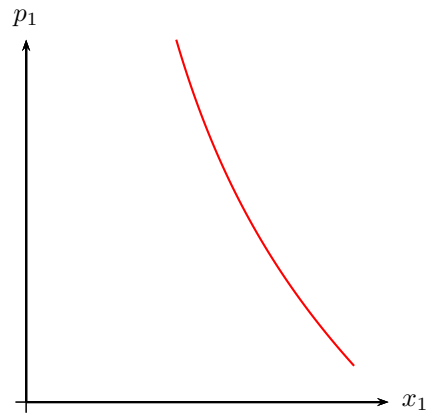
curva de Engel do bem 1:



h)

$$x_1(p_1, p_2, p_3, m) = \frac{-p_1 + \sqrt{p_1^2 + 4mp_2}}{2p_2}$$
$$x_2(p_1, p_2, p_3, m) = \frac{p_1^2}{2p_2^2} + \frac{m}{p_2} - \frac{p_1}{2p_2} \sqrt{p_1^2 + 4mp_2}$$

curva de demanda do bem 1:



curva de Engel do bem 1:

