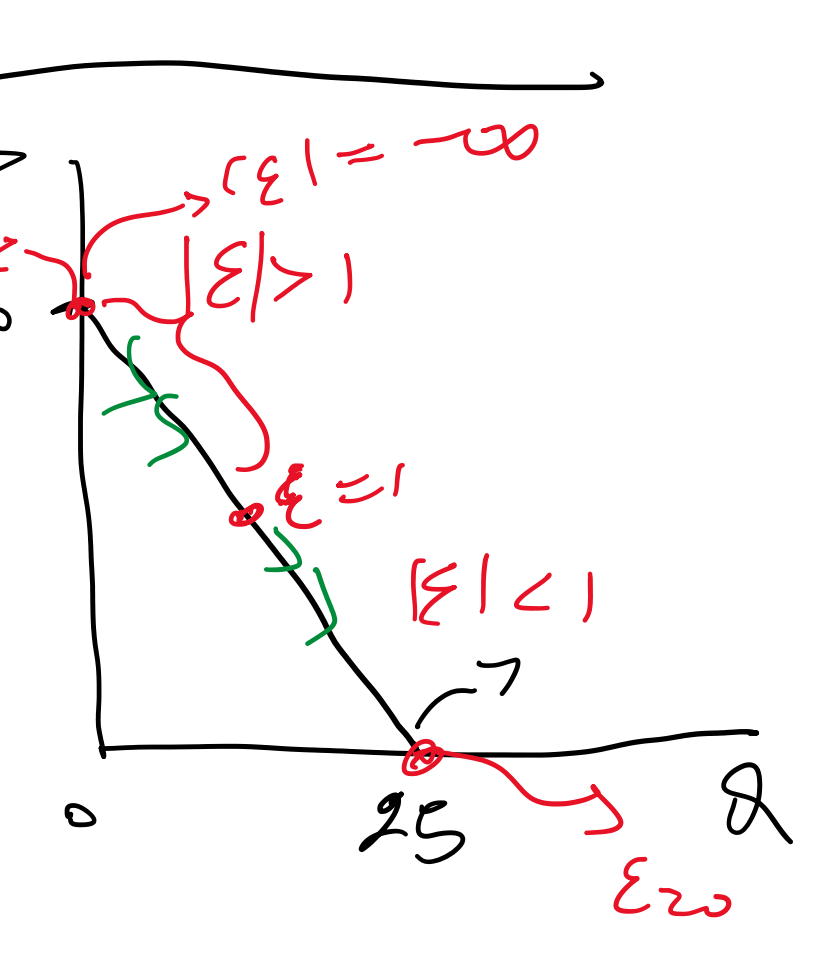
# Taking Stock: domanda-equilibrio-consumatore

venerdì 12 aprile 2024 08:40

EQUILIBRIO

D-S

$P = 50 - 2Q$



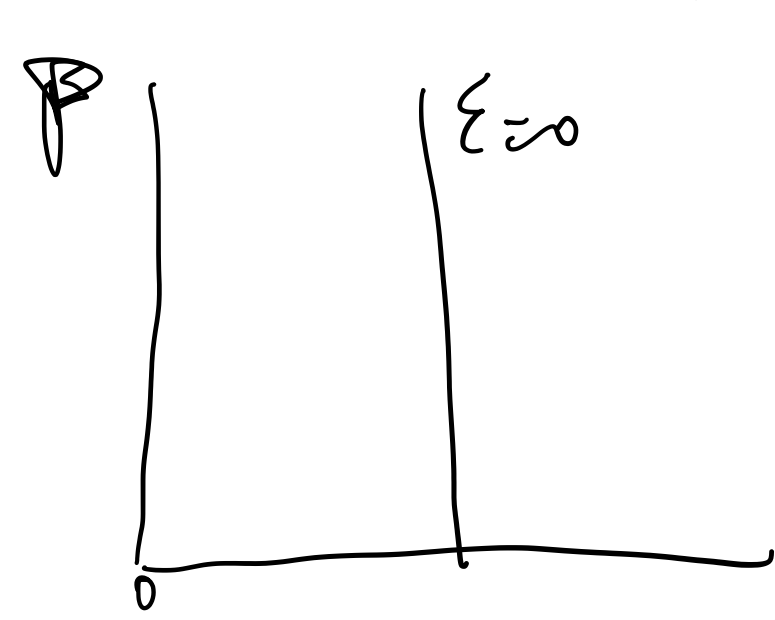
$\varepsilon = \frac{\Delta Q/Q}{\Delta P/P} = \frac{1}{\text{pendenza}} \cdot \frac{P}{Q}$

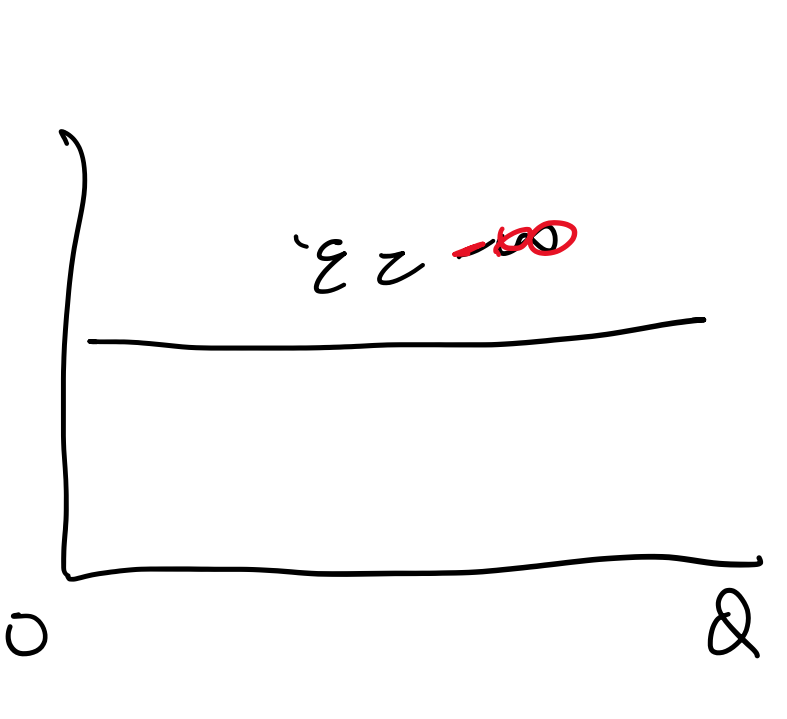
$\varepsilon = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$

$|\varepsilon| = \frac{1}{2} \cdot \frac{P}{Q}$

$\varepsilon = 1 (-) \uparrow 1\% \; P \Rightarrow Q \downarrow 1\%$

$\varepsilon = 0 \Rightarrow \quad \varepsilon = \frac{1}{2} \cdot \frac{P}{Q} \Rightarrow \varepsilon|_{P=0} = 0$





$\varepsilon = -\infty$

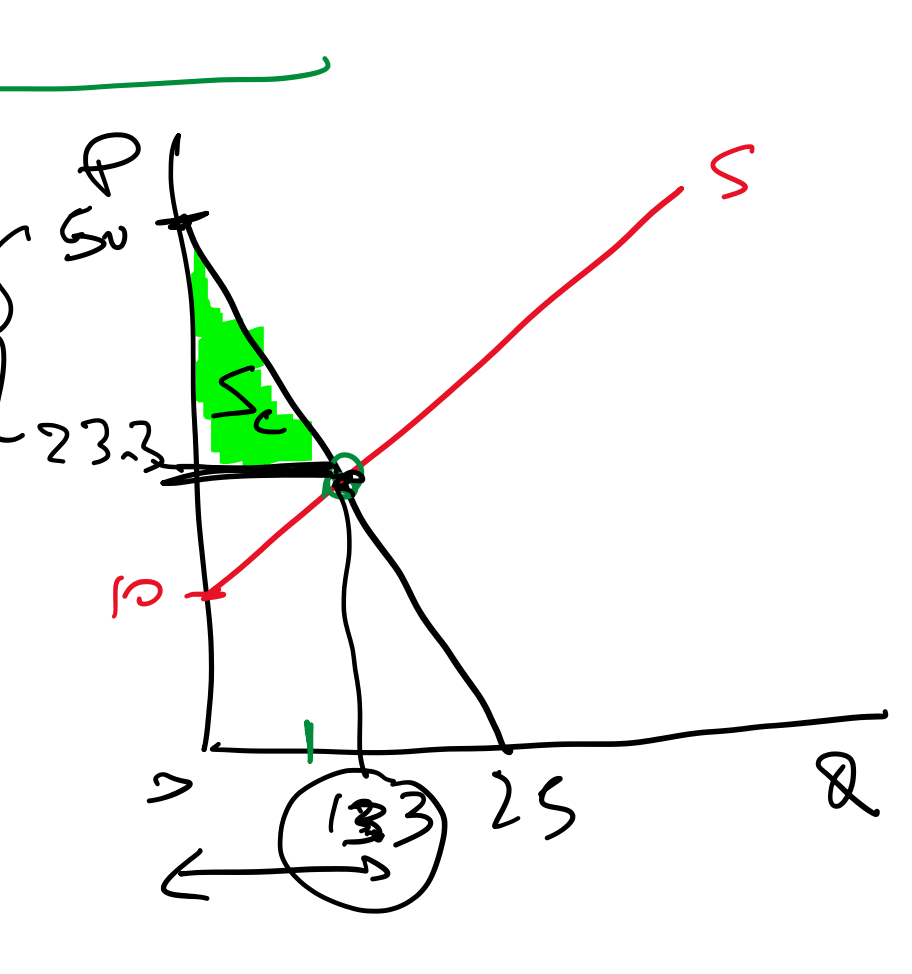
$\varepsilon = \frac{1}{2} \cdot \frac{P}{Q} \Rightarrow$

$\varepsilon|_{Q=0} =$

---

D: $P = 50 - 2Q$

S: $P = 10 + Q$



E: D = S

$50 - 2Q = 10 + Q$

$40 = 3Q \Rightarrow Q^* = 13.3 \Rightarrow P^* = 23.3$

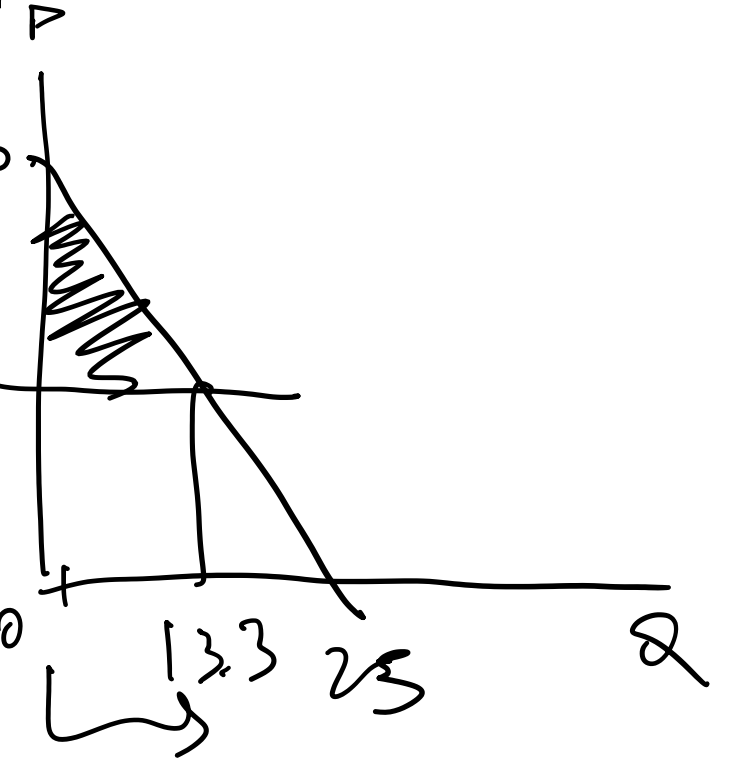
$\varepsilon_D = \frac{1}{2} \frac{P}{Q} = \frac{1}{2} \frac{23.3}{13.3}$

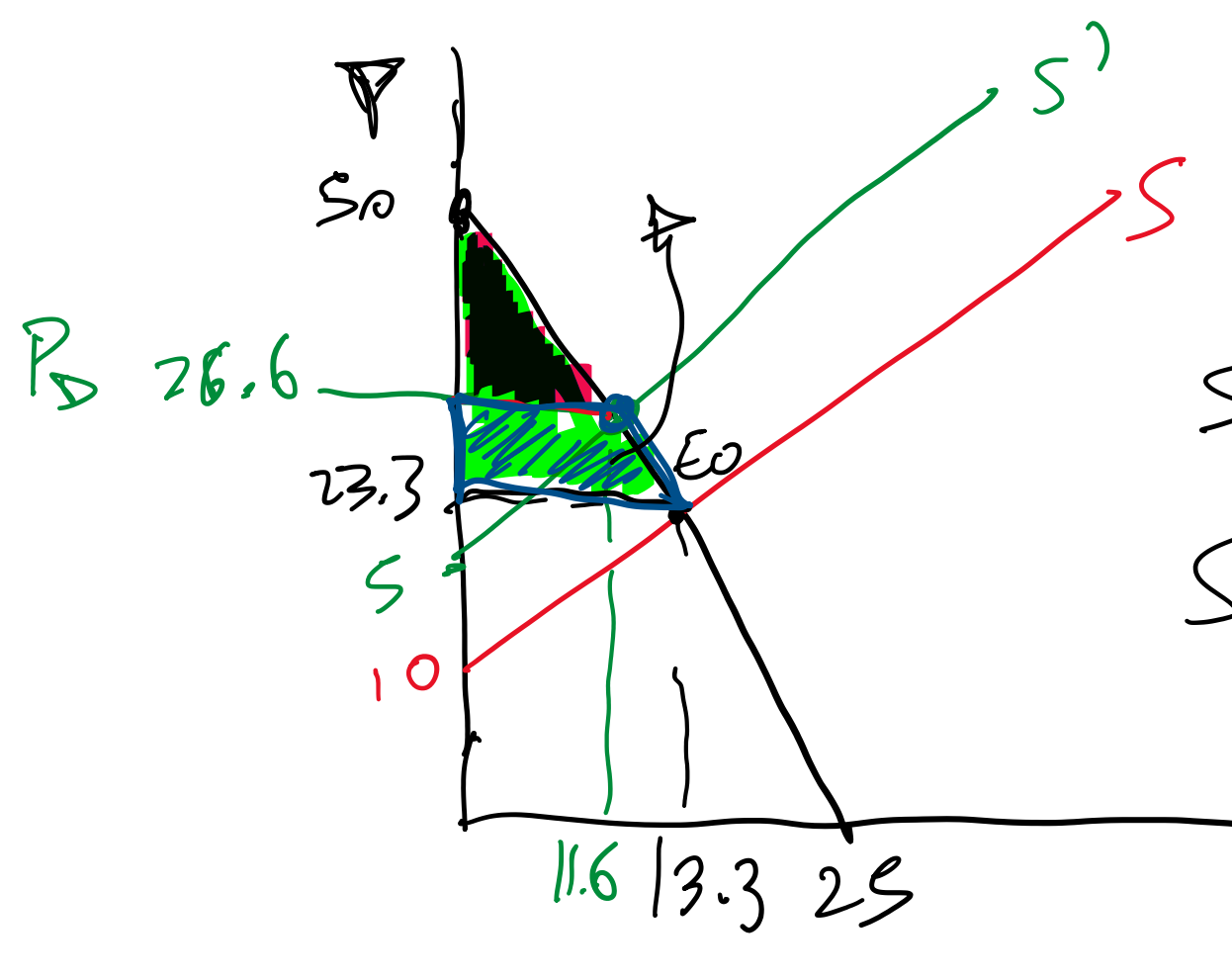
$\varepsilon_S = \frac{1}{1} \frac{P}{Q} = \frac{23.3}{13.3}$

$\varepsilon_{D/S} = \frac{\Delta Q/Q}{\Delta P/P} = \frac{1}{\text{pendenza}} \frac{P}{Q}$

$S_c = \frac{13.3 \cdot (50 - 23.3)}{2} =$

$\boxed{177.5 €}$





$\uparrow T = 5$

$S_c^0 = 177.5 €$

$S_c^1 = \frac{11.6 \cdot 23.4}{2} = 135.7 €$

$\Delta S = S_c^1 - S_c^0 = 41.8 €$

D: $\boxed{P = 50 - 2Q}$

S: $\boxed{P = 10 + Q} \rightarrow S': P = 10 + Q + T$

$\boxed{P = 15 + Q}$

$E': D = S' \Rightarrow 50 - 2Q = 15 + Q \Rightarrow$

$35 = 3Q \Rightarrow Q^* = \frac{35}{3} = 11.6$

$P^* = 26.6 = P_D$

$E_0: P^* = P_D = P_S = 23.3$

$E_1: P^{*\prime} = P_D' = 26.6$

$P_S^{*\prime} = 26.6 - T = \textcircled{21.6}$

$C \rightarrow \uparrow$

$t_D = \frac{P_D' - P_D}{T} = \frac{26.6 - 23.3}{T} = \textcircled{0.7}$

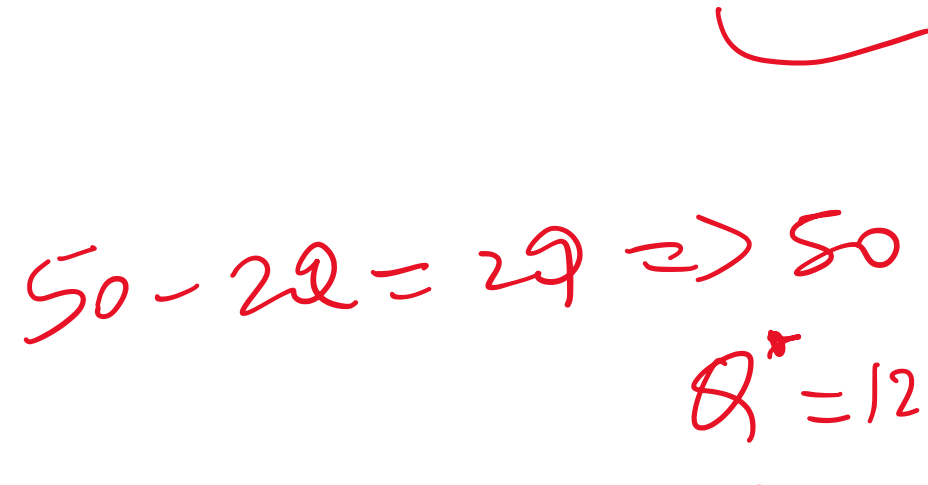
$t_S = \frac{P_S' - P_S}{T} = \frac{21.6 - 23.3}{T} = \textcircled{-0.3}$

$\textcircled{T = 5}$

$C = 0.7 \quad S = 0.3$

$3.3/5 \uparrow \quad 1.7/5 \downarrow$

---



$\varepsilon = \frac{1}{\text{pendenza}} \frac{P}{Q}$

$P = 50 - 2Q$

$\varepsilon_D = \frac{1}{2} \frac{P}{Q}$

$\varepsilon_D = 1 = \frac{1}{2} \frac{P}{Q} \Rightarrow \frac{1}{2} \frac{(50 - 2Q)}{Q} = 1$

$50 - 2Q = 2Q \Rightarrow 50 = 4Q \Rightarrow$

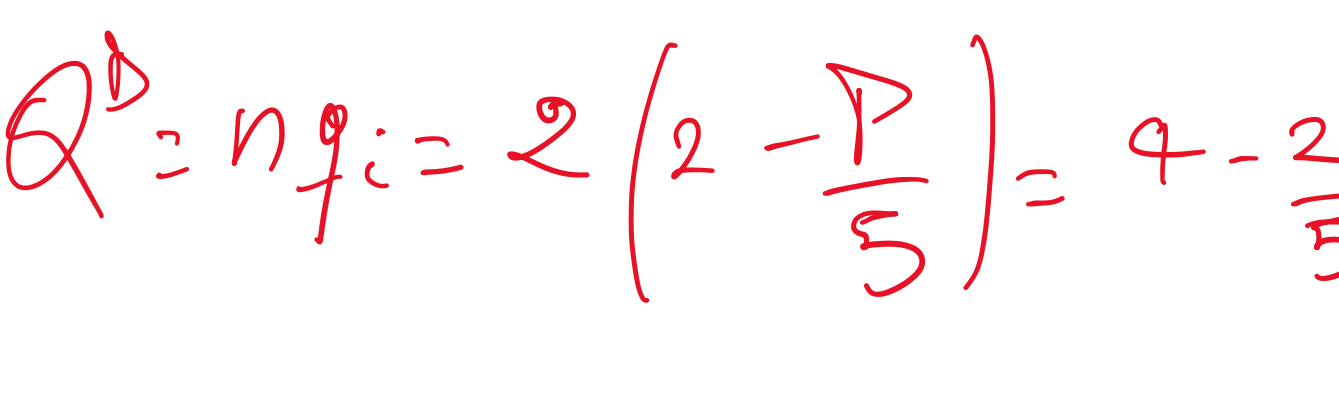
$Q^* = 12.5$

$P^* = 25$

$\varepsilon = 1$

---

$\boxed{P = 10 - 5q_i}$



$5q_i = 10 - P \Rightarrow \boxed{q_i = 2 - \frac{P}{5}}$

$Q^D = nq_i = 2\left(2 - \frac{P}{5}\right) = 4 - \frac{2}{5}P$

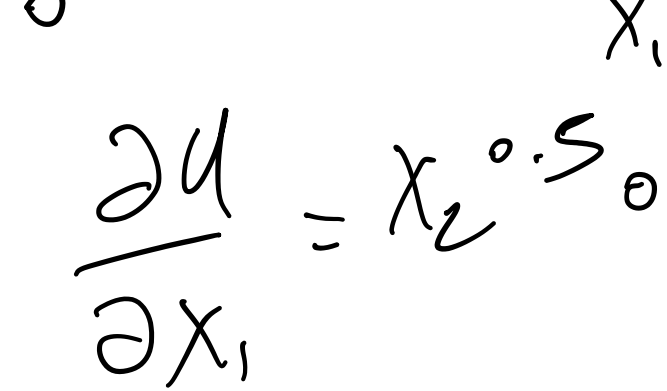
$Q^D = 4 - \frac{2}{5}P \Rightarrow \frac{2}{5}P = 4 - Q^D$

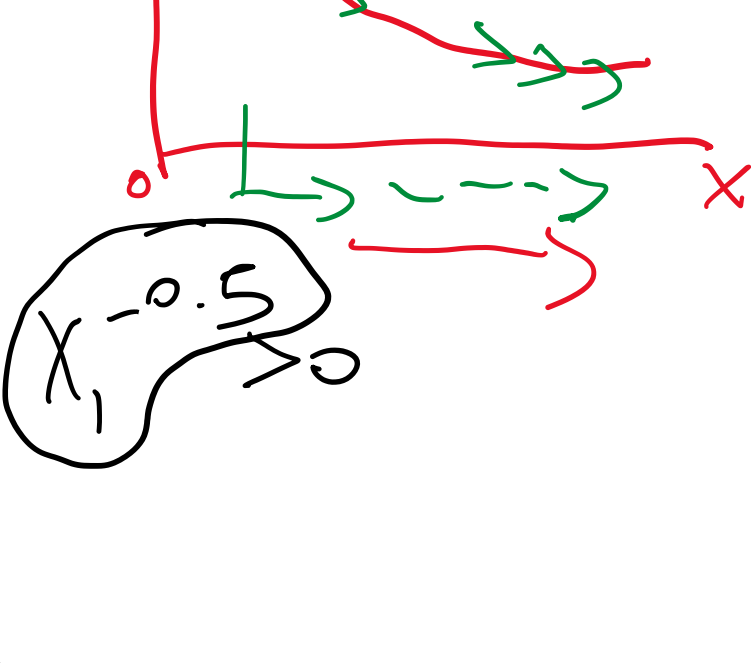
$P = 10 - \frac{5}{2}Q^D$

---

## SCELTA OTTIMA INDIVIDUALE CONSUMATORE

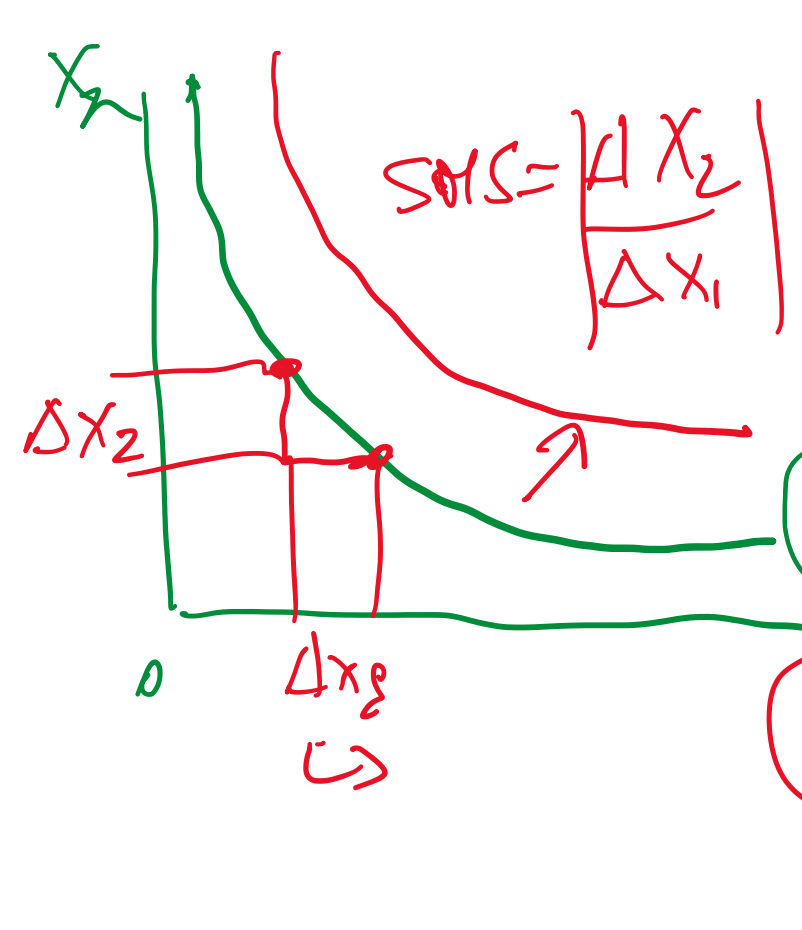
$U = X_1^{0.5} X_2^{0.5} \quad ; \quad U = U(X_1, \ldots, X_n)$





$\frac{\partial U}{\partial X_1} = X_2^{0.5} \, 0.5 \, (X_1^{-0.5}) > 0$

$\frac{\partial U}{\partial X_1} = \frac{X_2^{0.5} \cdot 0.5}{X_1^{0.5}} > 0$



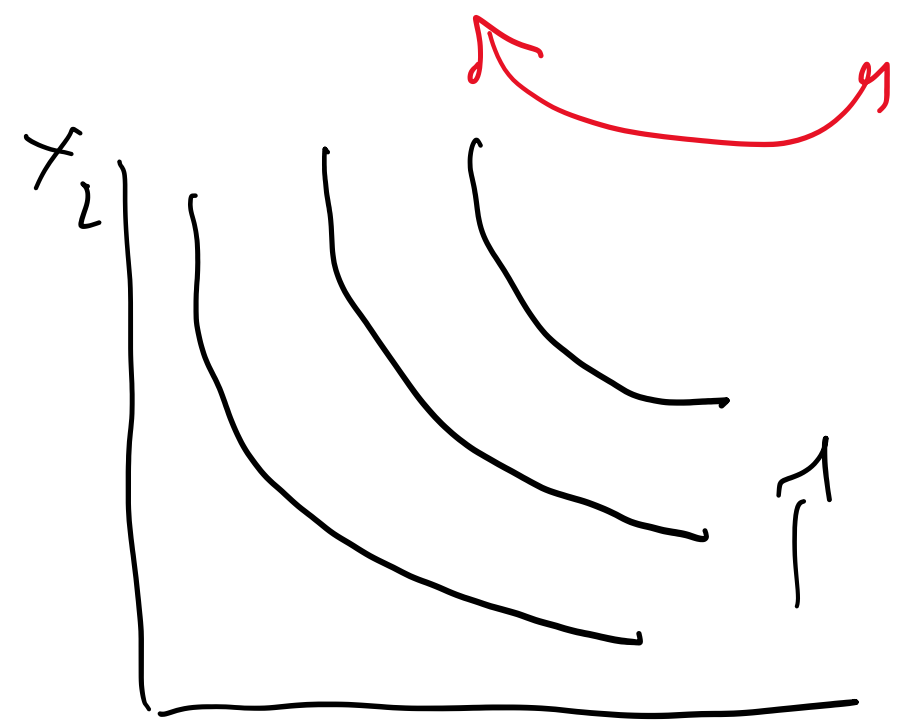
$U = X_1^{0.5} X_2^{0.5}$

$X_2^{0.5} = \frac{U}{X_1^{0.5}} \Rightarrow$

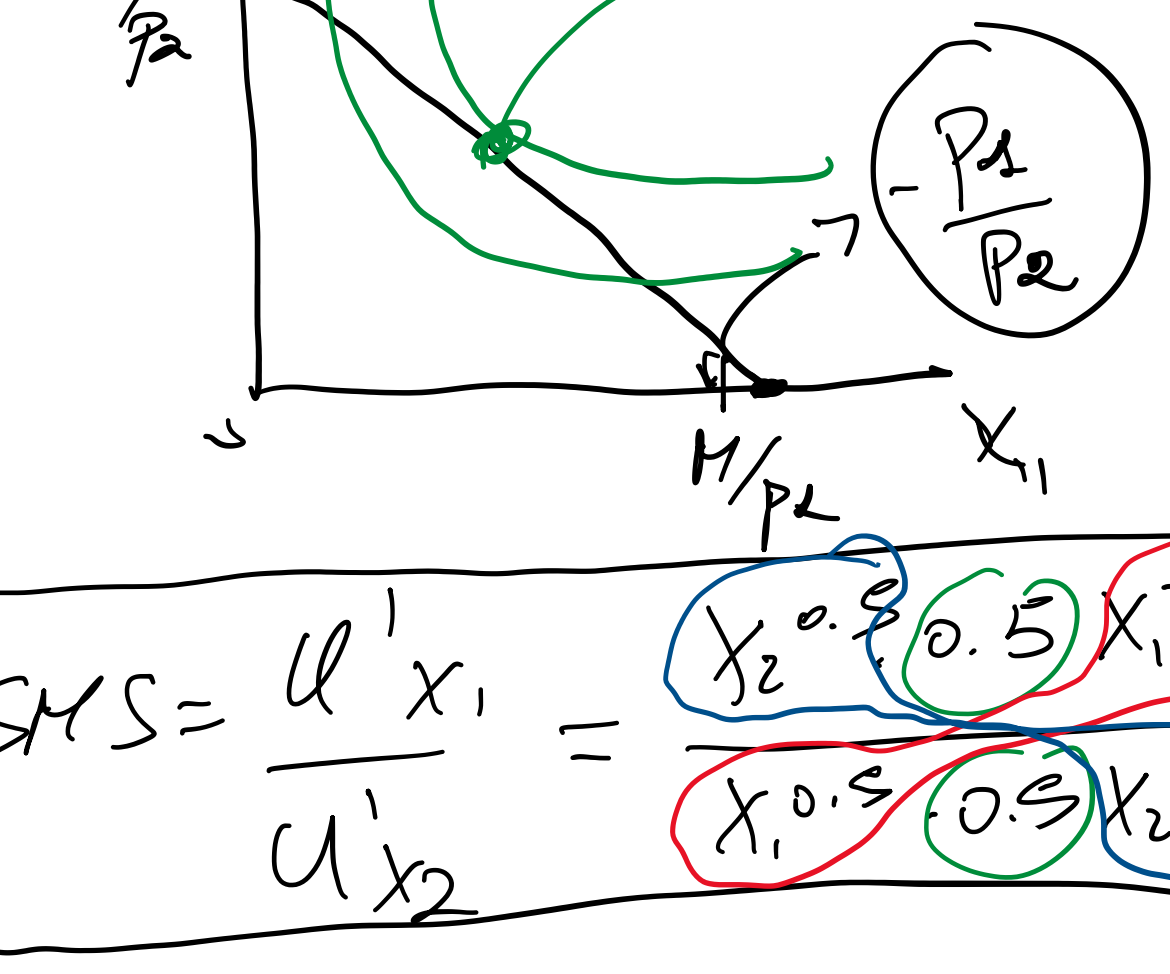
$X_2 = \frac{U^2}{X_1}$

$U = X_1^{0.5} X_2^{0.5}$

$SMS = \left|\frac{\Delta X_2}{\Delta X_1}\right| = \frac{U'_{X_1}}{U'_{X_2}}$



$M = P_1 X_1 + P_2 X_2$



$\boxed{SMS = \frac{U'_{X_1}}{U'_{X_2}} = \frac{X_2^{0.5} \, 0.5 \, X_1^{-0.5}}{X_1^{0.5} \, 0.5 \, X_2^{-0.5}}} = \frac{X_2}{X_1}$

$\frac{\partial U}{\partial X_1} = X_2^{0.5} \, 0.5 X_1^{-0.5} \; ; \; \frac{\partial U}{\partial X_2} = X_1^{0.5} \, 0.5 X_2^{-0.5}$

$SMS = \frac{X_2}{X_1}$

$M = 100, \; P_1 = 10, \; P_2 = 10$

Step 1: $SMS = \frac{P_1}{P_2} \Rightarrow \boxed{\frac{X_2}{X_1} = 1} \Rightarrow$

$\boxed{X_2 = X_1}$

Step 2: $100 = 10X_1 + 10X_2 \Rightarrow$

$100 = 10X_1 + 10X_1 \Rightarrow$

$100 = 20X_1 \Rightarrow X_1^* = 5$

$X_2^* = 5$

$\mathcal{L} = U() \pm \lambda$ (vincolo)

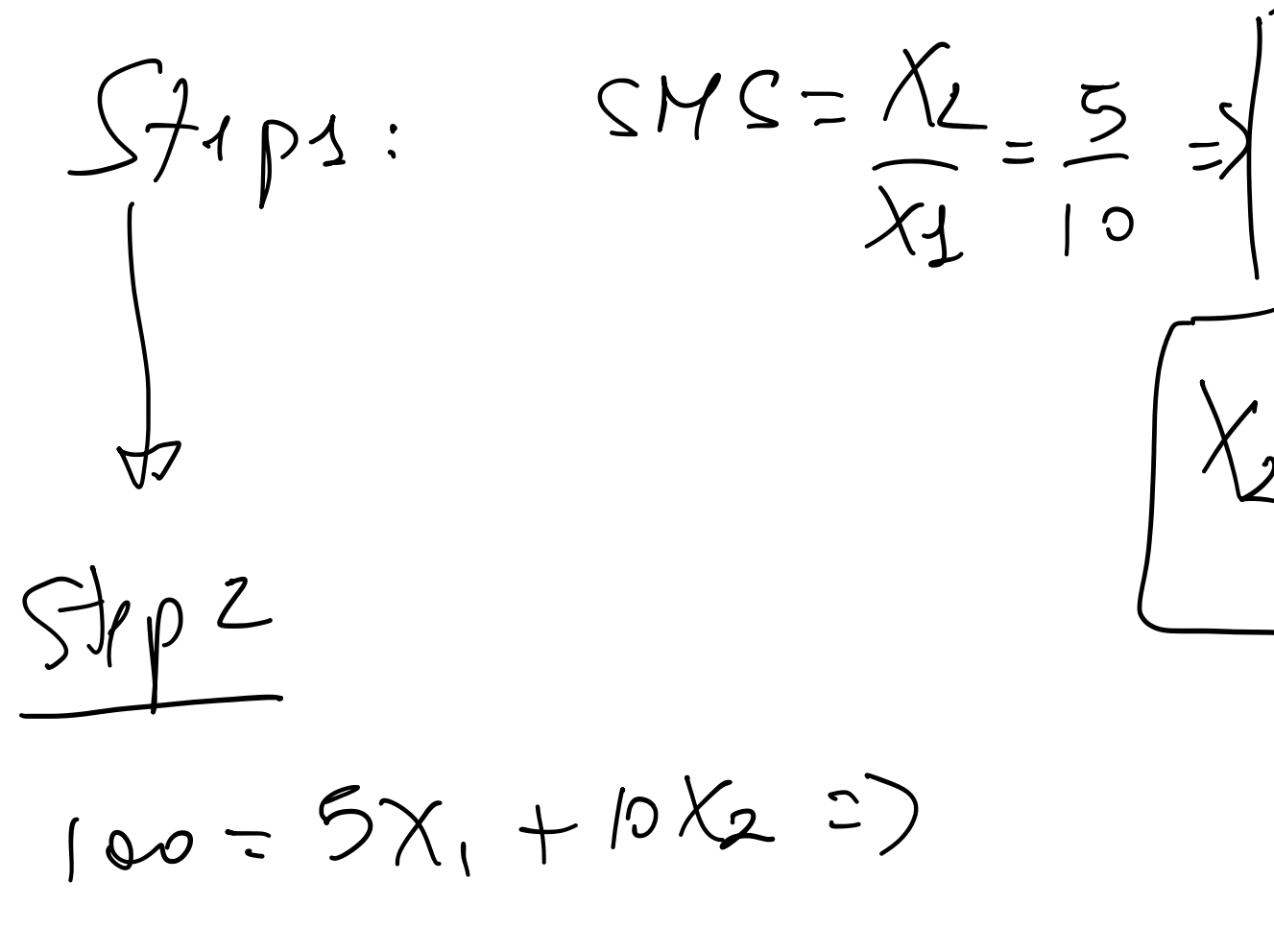
$\mathcal{L} = X_1^{0.5} X_2^{0.5} - \lambda (P_1 X_1 + P_2 X_2 - M)$

$\frac{\partial \mathcal{L}}{\partial X_1} = 0$

$\frac{\partial \mathcal{L}}{\partial X_2} = 0$

$\frac{\partial \mathcal{L}}{\partial \lambda} = 0$

---



Nuovo vincolo: $P_1' = 5$

Step 1: $SMS = \frac{X_2}{X_1} = \frac{5}{10} \quad \boxed{\frac{X_2}{X_1} = \frac{1}{2}}$

$\boxed{X_2 = \frac{X_1}{2}}$

Step 2

$100 = 5X_1 + 10X_2 \Rightarrow$

$100 = 5X_1 + 10\frac{X_1}{2} \Rightarrow 100 = 10X_1 \Rightarrow$

$\boxed{X_1^* = 10 \\ X_2^* = 5}$

$U_0 = X_1^{0.5} X_2^{0.5} = 10^{0.5} \cdot 10^{0.5} = \textcircled{10}$

$U_0 = 10 = X_1^{0.5} \cdot X_2^{0.5} \longleftrightarrow SMS = \frac{P_1'}{P_2}$

$\boxed{X_2 = \frac{X_1}{2}}$

$U_0 = 10 = X_1^{0.5} \cdot X_2^{0.5} =$

$10 = X_1^{0.5} \left(\frac{X_1}{2}\right)^{0.5} \Rightarrow$

$10 \cdot 2^{0.5} = X_1^* \Rightarrow 10 \cdot 1.41 = X_1 \Rightarrow$

$\boxed{X_1^* = 14.1}$

SOST: $X_1^* = 14.1 - 5 = 9.1$

REDD: TOT - SOST: $5 - 9.1 = -4.1$