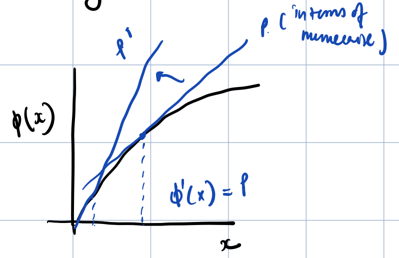
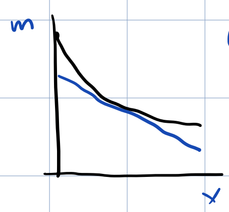
January 23.



Increasing, strictly concave ⇒ Dim MU

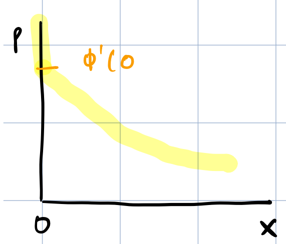
$\phi(x) = \sqrt{x} \Rightarrow x = 1/4p^2$

$\phi'(x) - p + \mu_x = 0.$

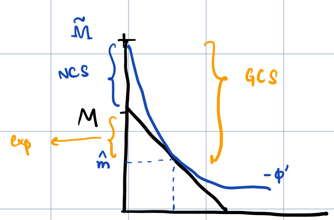


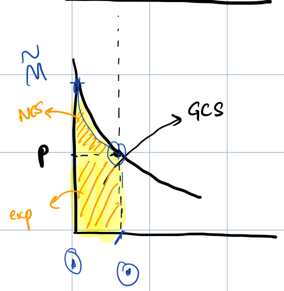
(It's the same thing flipped over.)

Demand Curve.



- Sloping Downward
- Continous (φ is continous)
- No income effect (quasi-linear pref)

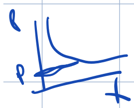




(Is only the optimal pt. derived in the Dd f^n from the above graph? I don't understand how other pts. are derived.)

[I see. this NCS is only valid for the specific point.]

To find $\tilde{M}$, we look at indirect utility function:

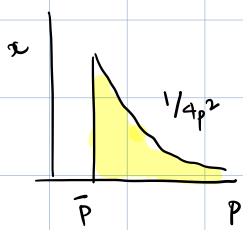


$$V = \int \frac{1}{4p^2} - \frac{1}{4p} + M \quad = \frac{1}{4p} + M = \tilde{M}$$

plug values in $\phi(x) - px + M$ (*)
↳ any M

↳ they are on the same IC

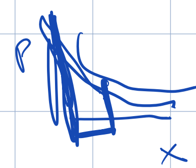
$NCS = 1/4p$



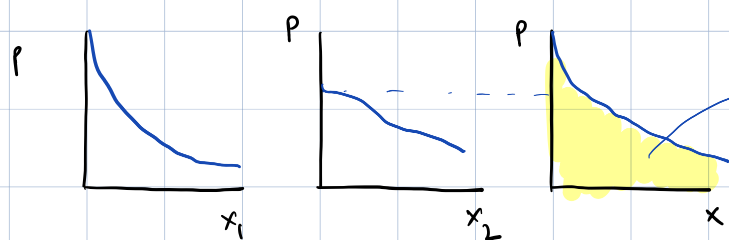
$$\int_p^{\infty} \frac{1}{4p^2}\,\partial p = -\frac{1}{4p}\Big|_p^{\infty}$$

?

Same



* Aggregate Demand (Horizontal Summation).



Gross Aggregate Consumer Surplus

- Dd curve: Downward sloping, Continous, independent of distn.
- All individual dd curves must be based on quasilinear pref for horizontal summation.

* $$\max_{x_1, x_2} \phi_1(x_1) + \phi_2(x_2) + m_1 + m_2 \quad \text{s.t. } x_1 + x_2 \leq \bar{X}$$

$$\phi'_1 = \phi'_2 = \lambda$$

[Cons 1 : x_1, m_1
Cons 2 : x_2, m_2]

* Supply side

Assume no fixed cost

$c_j(q_j)$, $q_j \geq 0$. Using numeraire good for prodn of good x.

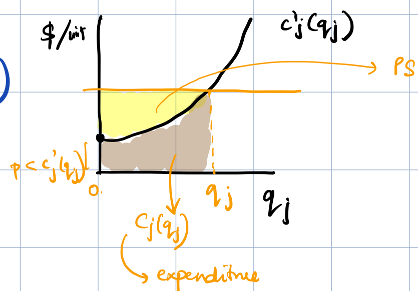
$c_j(0)=0 \quad c'>0 \quad c''>0$

max $\pi_j = pq_j - c_j(q_j)$

$\mathcal{L} = pq_j - c_j(q_j) + \mu_j q_j \Rightarrow p - c'_j(q_j) + \mu_j = 0$

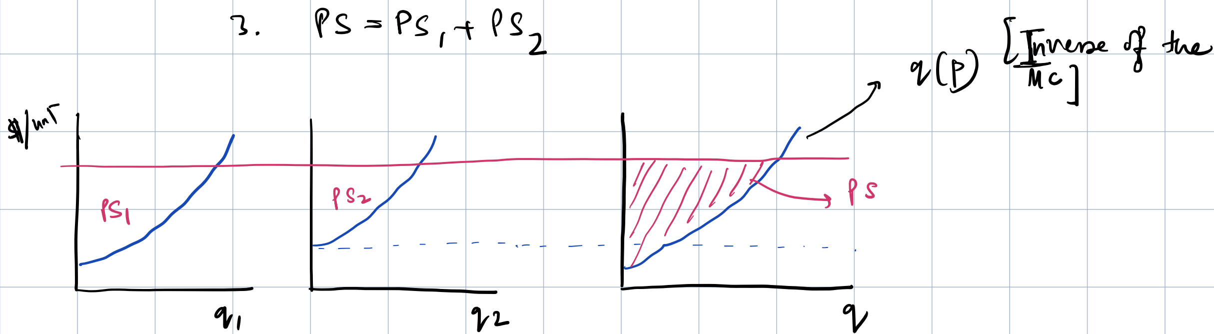
$q_j > 0 \Rightarrow p = c'_j(q_j)$

$q_j = 0 \Rightarrow p \leq c'_j(q_j)$



As :

1. Slope upwards.
2. Continuous
3. $PS = PS_1 + PS_2$



- $\min \sum_{j=1}^{J} c_j(q_j)$ s.t. $\sum q_j \geq \bar{q}$; $q_j \geq 0$

$$\mathcal{L} = \sum c_j(q_j) + \lambda(\bar{q} - \sum q_j) - \sum_j \mu_j q_j$$

$$c_j'(q_j) - \lambda - \mu_j = 0$$

why this constraint.