

Business Calculus II

Consumer

$D(p)$ = demand function of price p

- Consumer expenditure

$$p_o q_o = p_o * D(p_o)$$

- Consumer Surplus (p_{max} = max price; ie, when $D(p) = 0$)
 - If $D(p)$ is always greater than 0, $p_{max} = \infty$

$$\int_{p_o}^{p_{max}} D(p) dp$$

- Consumer Willingness and Ability to Spend

$$p_o q_o + \int_{p_o}^{p_{max}} D(p) dp$$

Producer

$S(p)$ = supply function of price p

- Producer Revenue

$$p_o q_o = p_o * S(p_o)$$

- Producer Surplus (p_s = shut down price; ie, $S(p) = 0$ when $p < p_s$)

$$\int_{p_s}^{p_o} S(p) dp$$

- Producer Willingness and Ability to Spend

$$p_o q_o + \int_{p_s}^{p_o} S(p) dp$$