

13,3
7/

Area between curves

Ex1: Find the area between

$$y = x^2 + 2 \text{ and } y = -x^2 \text{ on } 0 \leq x \leq 2$$

$$y = x^2 \quad \text{or} \quad y = \sqrt{x}$$

Lorenz curve. (Recall the basketball example).

Our measure of income distribution is the Gini Coefficient.

$$= \frac{\text{Area between } y=x \text{ or } y=L(x)}{\text{Area below } y=x} = \frac{\int_0^1 [x - L(x)] dx}{1/2}$$

$$= 2 \int_0^1 [x - L(x)] dx$$

Ex2: The Lorenz curves for income dist in the US in 1950 & 1970 are given. Find & compare Gini coefficients.

$$1950: \quad y = 0.925x^{1.891}$$

$$1970: \quad y = 0.920x^{1.783}$$

Which is better, a smaller or larger Gini Coefficient?

Average Value: The ave. val. of cont. fun

$y = f(x)$ on $[a, b]$ is

$$\text{Ave. value} = \frac{1}{b-a} \int_a^b f(x) dx.$$

Ex 3: The cost to produce x units of a product is $C(x) = x^2 + 400x + 2000$

- Find the average cost of producing 1000 units. (cost/unit).
- Find the average value of the cost for $[0, 1000]$. (cost per shipment).