13.3
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Area between curves

Ex1: Find the area between

$y = x^2 + 2$ and $y = -x^2$ on $0 \le x \le 2$

$y = x^2$ & $y = \sqrt{x}$

Lorenz curve. (Recall the basketball example).

Our measure of income distribution is the Gini Coefficient.

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

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

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

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

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

This problem doesn't make sense and the Lorenz curves do not go thru (1,1). Use different curves from the text for accuracy.

Which is better, a smaller or larger Gini Coefficient?

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Average Value: The ave. val. of cont. fct $y = f(x)$ on $[a,b]$ is

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

Ex3: The cost to produce x units of a product is $C(x) = x^2 + 400x + 2000$

a) Find the average cost of producing 1000 units. (cost/unit).

b) Find the average value of the cost fct on $[0, 1000]$. (cost per shipment).