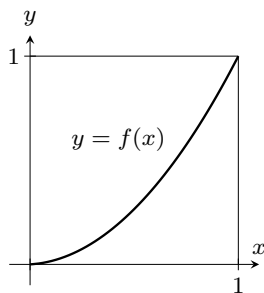


201-SH3-AB - Exercises #13 - Lorenz Curves

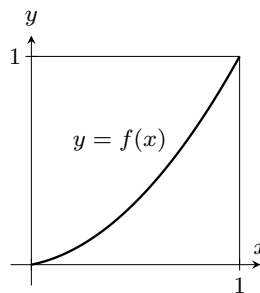
- (1) The income distribution of Absurdistan is described by the function $f(x) = 0.4x^{1.5} + 0.6x^{3.5}$. Find the Gini coefficient for the country.
- (2) Equidistan's income distribution is described by the function $f(x) = \frac{e^{0.2x} - 1}{e^{0.2} - 1}$. Find the Gini index for the country.
- (3) The income distribution of Penguinia is described by the function $f(x) = xe^{x^2-1}$. Find the Gini coefficient for the country.
- (4) A certain country's income distribution is described by the function $f(x) = \frac{15}{16}x^2 + \frac{1}{16}x$.
- (a) Sketch the Lorenz curve for this function.
 (b) Compute $f(0.4)$ and $f(0.9)$ and interpret your results.
- (5) A certain country's income distribution is described by the function $f(x) = \frac{4}{5}x^2 + \frac{1}{5}x$.
- (a) Sketch the Lorenz curve for this function.
 (b) Compute $f(0.3)$ and $f(0.7)$ and interpret your results.
- (6) In a study conducted by a certain country's Economic Development Board, it was found that the Lorenz curve for the distribution of income of college teachers was described by the function $f(x) = \frac{13}{14}x^2 + \frac{1}{14}x$ and that of lawyers by the function $g(x) = \frac{9}{11}x^4 + \frac{2}{11}x$.
- (a) Compute the coefficient of inequality for each Lorenz curve.
 (b) Which profession has a more equitable income distribution?
- (7) In a study conducted by a certain country's Economic Development Board, it was found that the Lorenz curve for the distribution of income of stock-brokers was described by the function $f(x) = \frac{11}{12}x^2 + \frac{1}{12}x$ and that of high school teachers by the function $g(x) = \frac{5}{6}x^2 + \frac{1}{6}x$.
- (a) Compute the coefficient of inequality for each Lorenz curve.
 (b) Which profession has a more equitable income distribution?

ANSWERS:

- (1) 0.4133
 (2) 0.0333
 (3) $\frac{1}{e} \approx 0.3679$



- (4) (a)
 (b) $f(0.4) = 0.175$. The lowest 40% of the people receive 17.5% of the total income.
 $f(0.9) \approx 0.8156$. The lowest 90% of the people receive 81.56% of the total income.



- (5) (a)
 (b) $f(0.3) = 0.132$. The lowest 30% of the people receive 13.2% of the total income.
 $f(0.7) = 0.532$. The lowest 70% of the people receive 53.2% of the total income.
- (6) (a) 0.31; 0.491
 (b) College teachers
- (7) (a) 0.306; 0.278
 (b) High school teachers