

INTEGRAL APPLICATIONS

1. Thm. **Area Between Two Curves:** If f and g are continuous on $[a, b]$ and $g(x) \leq f(x)$ for all x in $[a, b]$, then the area of the region bounded by the graphs of f and g and the vertical lines $x = a$ and $x = b$ is $\int_a^b [f(x) - g(x)] dx$.
2. Def. **Lorenz Curve:** The Lorenz curve indicates the total income which is received by the bottom t proportion ($0 \leq t \leq 1$) of the population.
3. Def. **Gini Index:** The Gini Index is twice the area between the Lorenz curve and the Egalitarian Line.
4. Thm. **Gini Index:** Let $L(x)$ represent the Lorenz curve. Then
$$\text{GiniIndex} = 2 \int_0^1 [x - L(x)] dx = 1 - 2 \int_0^1 L(x) dx .$$
5. Def. **Work:** If a constant force F acts over a fixed distance D , then the work done is $W = FD$.

-----End for Chapter 6 Test-----