

MA205 – LSN 10

The Substitution Rule I

"Never give in--never, never, never, never, in nothing great or small, large or petty, never give in except to convictions of honour and good sense. Never yield to force; never yield to the apparently overwhelming might of the enemy." .

--Winston Churchill



Objectives

- Evaluate integrals using the method of substitution.

4 THE SUBSTITUTION RULE If $u = g(x)$ is a differentiable function whose range is an interval I and f is continuous on I , then

$$\int f(g(x))g'(x)dx = \int f(u)du$$

p 401, Stewart

6 THE SUBSTITUTION RULE FOR DEFINITE INTEGRALS If g' is continuous on $[a, b]$ and f is continuous on the range of $u = g(x)$, then

$$\int_a^b f(g(x))g'(x)dx = \int_{g(a)}^{g(b)} f(u)du$$

p 404, Stewart

Example 7, Graphically

