6.5-Substitution

Recall: Chain Rule for Derivatives: $\frac{d}{dx}(f(g(x))) =$

Therefore

Problem: Recognizing when you have an integral of this form and what f and g are.

Solution: Substitute for $g(x)$, your "inner function"

Examples:

Compute $\int_0^2 \frac{dx}{(3x-2)^2}\,dx$

Compute $\int \frac{e^x}{e^{2x}+1}\,dx$

Compute $\int \cos^3(2y)\sin(2y)\,dy$

Compute $\int x^3\sqrt{x^2+1}\,dx$

Useful for 152: If f is even, then

If f is odd, then

On Your Own: #5, 7, 11, 19, 27, 35, 39, 43, 47, 55, 61, 65