

**Substitution Method of Integration**

Integration by Substitution – used when you have a function inside another functions  
(~ chain rule)

$$\int f(g(x)) \cdot g'(x) dx =$$

**Find each indefinite integral.**

*Example 1:*

$$\int 2x(x^2 - 9)^3 dx$$

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*Example 2:*  $\int 4x \sqrt[3]{1 - 2x^2} dx$

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*Example 3:*  $\int \frac{x^3+1}{\sqrt{4x+x^4}} dx$

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*Example 4:*  $\int \csc 5x \cot 5x dx$

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*Example 5:*  $\int x \sin x^2 dx$

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*Example 6:*  $\int \sin^2 x \cos x dx$