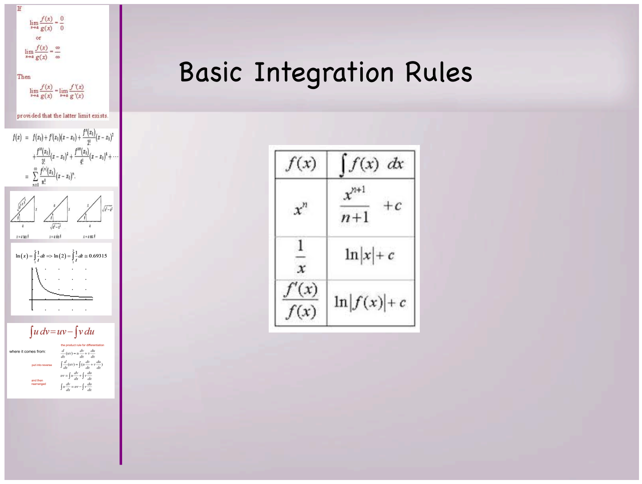

<u>Basic Integration Rules: Substitution</u>

u-substitution for Integration

Let g be a differentiable function and suppose F is an antiderivative of f.

If $u = g(x)$, then $\int f(g(x))g'(x)dx = \int f(u)du = F(u) + c = F(g(x))+c$.

EX 1 $\int \frac{3x}{\sin^2(4x^2)}dx$

EX 2 $\int \frac{5e^{3/x^2}}{x^3}dx$

EX 3 $\int \frac{5}{9+(2x-1)^2}\,dx$

EX 4 $\int \frac{3x^2-4x+2}{x-2}dx$

EX 5 $\int \frac{2x}{\sqrt{1-x^4}}\,dx$

EX 6 $\int \frac{\sin(\ln(4x^2))}{x}dx$