Recitation Handout 1(a): Reversing the Chain Rule

• Find an equation for each of the anti-derivatives (or indefinite integrals) given in the table below. In each case, identify the "inside function" and then reverse the Chain Rule.

Anti-derivative (Indefinite integral)	***"Inside Function"***	***Equation for Anti-Derivative***
$\int 3\cdot\left[x^7+\ln(x)\right]^2\cdot\left(7x^6+\frac{1}{x}\right)\cdot dx$		
$\int 7\cdot\left[2x+e^x\right]^6\cdot\left(2+e^x\right)\cdot dx$		
$\int \frac{8\cdot(0.993)^{\left[x^5+\ln(x)\right]}}{\ln(0.993)}\cdot\left(5x^4+\frac{1}{x}\right)\cdot dx$		
$\int e^{\left[x^2+x^3\right]}\cdot\left(2x+3x^2\right)\cdot dx$		
$\int \frac{1}{2}\cdot\frac{1}{\sqrt{x^4+e^x+1}}\cdot\left(4x^3+e^x\right)dx$		
$\int \frac{1}{\ln(x)}\cdot\frac{1}{x}\cdot dx$		

Answers: **(a)** $[x^7 + \ln(x)]^3 + C$. **(b)** $[2x + e^x]^7 + C$. **(c)** $8*(0.993)^{[x\wedge 65+\ln(x)]}/[\ln(0.993)]^2 + C$. **(d)** $e^{[x\wedge 2 + x\wedge 3]} + C$. **(e)** $(x^4 + e^x + 1)^{1/2} + C$. **(f)** $\ln(\ln(x)) + C$.