ICE - Reversing the Chain Rule

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

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

Answers: **(a)** $[x^7 + \ln(x)]^3 + C.$ **(b)** $[2x + e^x]^7 + C.$ **(c)** $8*(0.993)^{[x^6 + \ln(x)]} + C.$
(d) $e^{[x^2 + x^3]} + C.$ **(e)** $(x^4 + e^x + 1)^{1/2} + C.$ **(f)** $\ln(\ln(x)) + C.$