Alan Tupaj Vista Murrieta High School Website: www.vmhs.net (Click on "Teachers" then "Alan Tupaj")	U-Substitution AP Readiness Session 5 Answers to examples posted on my website
U-Substitution Questions	**Examples**
Integrating a function to a power: • Identity the inside function *u* • Differentiate and isolate *du* • Adjust for different or missing constant • Substitute *u* and *du* • Integrate resulting function using power rule • Substitute back original function and add C	$\int x(x^2+3)^5 dx$
Integrating a trigonometric function (including powers on trig functions) • Identify a function *u* and its derivative *du* • Adjust for different or missing constant • Substitute *u* and *du* • Integrate as single trig function or using the power rule or integrate to directly to another trig function • Substitute back original function and add C	A. $\int (\sin x)\cos^3(x)dx$ B. $\int (\sec(5x)\tan(5x)dx$

Integrating functions in denominators Careful: A power in the denominator is just a negative exponent, but a function without a power in the denominator will be integrated as *ln* • Identify a function *u* and its derivative *du* • Adjust for different or missing constant • Substitute *u* and *du* • Integrate with negative exponent or *ln* • Substitute back original function and add C	A. $\int \frac{(2x-1)dx}{x^2-x+5}$ B. $\int \frac{x^2 dx}{(x^3-4)^2}$
Integrating functions that result in inverse trig functions • Factor to get the correct format (need a value of 1 in denominator) • Identify a function *u* and its derivative *du* • Adjust for different or missing constant • Substitute *u* and *du* • Integrate as an inverse trig function • Substitute back original function and add C	$\int \frac{dx}{4+16x^2}$