Notes: Derivatives Using lnx and Implicit Differentiation Derivatives (2) Day 3

Remember PC-Notecard

Rule for lnx:

1. $\ln(ab) =$ ______________
2. $\ln\left(\frac{a}{b}\right) =$ ______________
3. $\ln a^b =$ ______________

Also Remember D-Notecard

Rule for $\frac{d}{dx}[\ln(AT)] =$

Example One: Find the derivative of each by first breaking them up using the Rules of lnx.

A. $f(x) = \frac{(x+1)^2(2x^2-3)}{\sqrt{x^2+1}}$

B. $f(x) = \frac{x(x+1)^3}{(3x-1)^2}$

Example Two: Find $f'(x)$ of each:

You know how to work problems if the base is a variable or function and the power is a number.

Know: $\frac{dy}{dx}\left[(AT)^n\right] =$

A. $f(x) = x^2$

B. $f(x) = (2x+5)^2$

You know how to work problems if the base is a number and the power is a variable or a function.

Know: $\frac{dy}{dx}\left[b^{AT}\right] =$

A. $f(x) = 2^x$

B. $f(x) = 2^{3x^2}$

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Example Three: Find $f'(x)$ of each:

What do you do if you have a function or variable as the base and the power?

$f(x) = x^{sinx}$

1. Rewrite f(x) as y	
2. Ln both sides	
3. Use Rules of ln to bring power out front as multiplication.	
4. Take derivative of both sides. Use implicit on left and always use power rule on right.	
5. Solve for $\frac{d}{dx}$	
6. Substitute in your original y.	

Example Four: Find $f'(x)$ of each:

A. $f(x) = x^x$

B. $f(x) = (2x - 3)^{cosx}$