

Chain Rule:

Power Rule, a & n constant. $\frac{d}{dx}[au^n]$	Exponential Function, base e . $\frac{d}{dx}[e^u]$	Exponential function, base a . $\frac{d}{dx}[a^u]$
$\frac{d}{dx}[\sin u]$	$\frac{d}{dx}[\cos u]$	$\frac{d}{dx}[\tan u]$
$\frac{d}{dx}[\sec u]$	$\frac{d}{dx}[\csc u]$	$\frac{d}{dx}[\cot u]$

Implicit Differentiation:

1. Find $\frac{dy}{dx}$ given $x^2 - 3xy + 4y^5 = 100$.

2. Find $\frac{d^2B}{dt^2}$ in terms of B given $\frac{dB}{dt} = 6\sqrt{10 - B}$.

Derivatives of Inverse Functions:

If $h(x)$ and $g(x)$ are inverses, then $h(g(x)) = x$. What happens when we differentiate that equation?

1. Given that $p(x) = \sqrt[3]{2x - 1}$ find $[p^{-1}]'(5)$.
2. The function $f(x)$ is an increasing function about which little else is known other than $f(2) = 7$ and $f'(2) = 5$. Find $(f^{-1})'(7)$

More derivatives to have on quick recall in your brain!

$\frac{d}{dx} [\ln u]$	$\frac{d}{dx} \left[\frac{1}{u} \right]$	$\frac{d}{dx} [\sqrt{u}]$
$\frac{d}{dx} [\arcsin u]$	$\frac{d}{dx} [\cos^{-1} u]$	$\frac{d}{dx} [\arctan u]$

For practice, do the Level 2 Four Corners and the Chain Rule Circuit that you can find in the shared folder! Also you can search “Implicit Differentiation” and “Derivatives of Inverses” to acquire more practice.