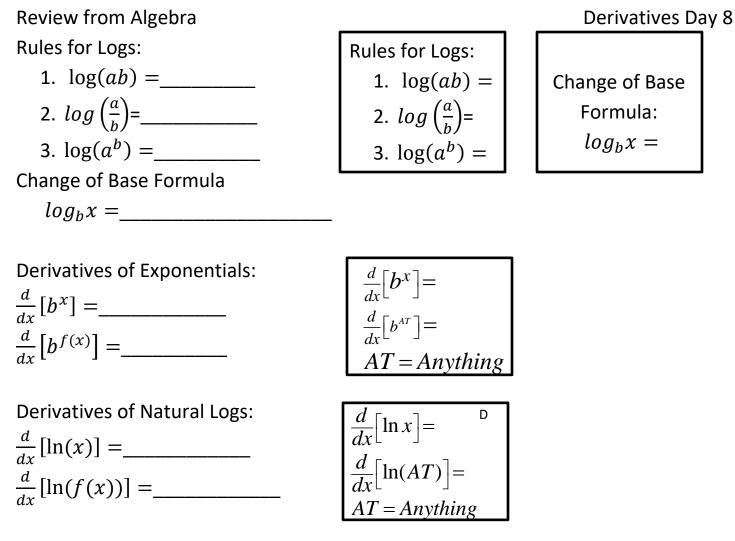
Notes: Derivatives of General Exponentials and Logarithmic Functions



Example One: Find the derivative of each:

A.
$$f(x) = 4^{3x}$$
 B. $f(x) = 5^{x^2}$ C. $f(x) = x3^x$

Example Two: Find
$$f'(x)$$
 of each:
A. $f(x) = x lnx$
B. $f(x) = (lnx)^2$
C. $f(x) = ln(x^2)$

Example Three: Find
$$\frac{dy}{dx}$$
 of each:
A. $y = ln(x^2 + 1)$ B. $y = ln(\sqrt{sinx})$ C. $y = ln(e^x)$

Example Four: Find the derivative of each

A. $y = log_{10}x$ B. $y = log_3x$ C. $y = log_4(x^2 + x)$

Example Five: Find the derivative of each $(1, 2)^2(-2, -2)$

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 6: Find f'(x) of each: A. $f(x) = x^x$ B. $f(x) = x^{sinx}$

Example 7: Find the equation of the tangent line to the function at the given point.

A.
$$f(x) = \left(\sqrt{2}\right)^x$$
 at $x = \sqrt{2}$

B.
$$s(t) = \ln t$$
 at $x = 5$

C.
$$f(x) = \ln(sinx)$$
 at $x = \frac{\pi}{4}$

D.
$$f(x) = log_3 x$$
 at $x = 1$