DERIVATIVE RULES

1. $\frac{d[a(\square)^n]}{dx} = na \bullet \square^{n-1} \bullet \frac{d\square}{dx}$
2. $\frac{d(\square \bullet \Delta)}{dx} = \square \bullet \frac{d\Delta}{dx} + \Delta \bullet \frac{d\square}{dx}$
3. $\frac{d\left(\frac{\square}{\Delta}\right)}{dx} = \frac{\Delta \bullet \frac{d\square}{dx} - \square \bullet \frac{d\Delta}{dx}}{\Delta^2}$
4. $\frac{d[\ln(\square)]}{dx} = \frac{1}{\square} \bullet \frac{d\square}{dx}$
5. $\frac{d(e^{\square})}{dx} = e^{\square} \bullet \frac{d\square}{dx}$
6. $\frac{d(\sin \square)}{dx} = \cos \square \bullet \frac{d\square}{dx}$
7. $\frac{d(\cos \square)}{dx} = -\sin \square \bullet \frac{d\square}{dx}$
8. $\frac{d(\tan \square)}{dx} = \sec^2 \square \bullet \frac{d\square}{dx}$
9. $\frac{d(\cot \square)}{dx} = -\csc^2 \square \bullet \frac{d\square}{dx}$
10. $\frac{d(\sec \square)}{dx} = \sec \square \bullet \tan \square \bullet \frac{d\square}{dx}$
11. $\frac{d(\csc \square)}{dx} = -\csc \square \bullet \cot \square \bullet \frac{d\square}{dx}$
12. $\frac{d(\sin^{-1} \square)}{dx} = \frac{1}{\sqrt{1 - \square^2}} \bullet \frac{d\square}{dx}$
13. $\frac{d(\cos^{-1} \square)}{dx} = \frac{-1}{\sqrt{1 - \square^2}} \bullet \frac{d\square}{dx}$
14. $\frac{d(\tan^{-1} \square)}{dx} = \frac{1}{1 + \square^2} \bullet \frac{d\square}{dx}$
15. $\frac{d(\cot^{-1} \square)}{dx} = \frac{-1}{1 + \square^2} \bullet \frac{d\square}{dx}$
16. $\frac{d(\sec^{-1} \square)}{dx} = \frac{1}{|\square|\sqrt{(\square^2 - 1)}} \bullet \frac{d\square}{dx}$
17. $\frac{d(\csc^{-1} \square)}{dx} = \frac{-1}{|\square|\sqrt{(\square^2 - 1)}} \bullet \frac{d\square}{dx}$

LOGARITHM RULES

1. $\ln(\square \bullet \Delta) = \ln(\square) + \ln(\Delta)$
2. $\ln\left(\frac{\square}{\Delta}\right) = \ln(\square) - \ln(\Delta)$
3. $\ln(\square^{\Delta}) = \Delta \bullet \ln(\square)$

EXPONENT RULES

1. $\diamond^{\square} \bullet \diamond^{\Delta} = \diamond^{(\square + \Delta)}$
2. $\frac{\diamond^{\square}}{\diamond^{\Delta}} = \diamond^{(\square - \Delta)}$
3. $[\diamond^{\square}]^{\Delta} = \diamond^{(\square \bullet \Delta)}$

SPECIAL TECHNIQUE

$y = (\Delta)^{\square}$

$\ln(y) = \ln[(\Delta)^{\square}]$

$\ln(y) = \square \bullet \ln(\Delta)$

$\frac{1}{y} \bullet \frac{dy}{dx} = \frac{\square}{\Delta} \bullet \frac{d\Delta}{dx} + \ln(\Delta) \bullet \frac{d\square}{dx}$

$\frac{dy}{dx} = (\Delta)^{\square} \bullet \left[\frac{\square}{\Delta} \bullet \frac{d\Delta}{dx} + \ln(\Delta) \bullet \frac{d\square}{dx}\right]$