

Fill in the blanks with the correct answers. Write your answer on a separate sheet of paper.

1. The derivative of a constant is _____.
2. The derivative of the n th power of a variable is the product of _____ and the _____ power of the variable.
3. The derivative of a sum of a finite number of differentiable functions is a sum of the derivatives, and the derivative of the _____ equals the difference of the derivatives.
4. The derivative of a product of two functions is the first function times the _____ of the second plus the second function times the derivative of the first.
5. The derivative of a _____ of two functions is the denominator times the derivative of the numerator minus the numerator times the derivative of the denominator divided by the denominator squared.
6. Expressions written in _____ form can be converted to logarithmic function and vice versa.
7. Derivative of Logarithmic Function:

$$\frac{d}{dx}(\log_b x) = \frac{1}{x \ln b}$$

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8. The most widely used trigonometric functions in modern mathematics are the _____, the _____, and the _____. Their reciprocals are the cosecant, the secant, and the cotangent, respectively.
9. $D_x(\sec x) =$ _____
10. $D_x(\cot x) =$ _____