

CALCULUS AB
REVIEW OF DERIVATIVES

NAME _____
HOUR _____

1. Fill in the following derivatives:

$$\frac{d}{dx}[c] = \quad , c \text{ is a constant.}$$

$$\frac{d}{dx}[\cot x] =$$

$$\frac{d}{dx}[x^n] =$$

$$\frac{d}{dx}[\cot x] =$$

$$\frac{d}{dx}[f \cdot g] =$$

$$\frac{d}{dx}[\sec x] =$$

$$\frac{d}{dx}\left[\frac{f}{g}\right] =$$

$$\frac{d}{dx}[\csc x] =$$

$$\frac{d}{dx}\left[\frac{1}{g}\right] =$$

$$\frac{d}{dx}[\log_b x] =$$

$$\frac{d}{dx}[\sqrt{x}] =$$

$$\frac{d}{dx}[\ln x] =$$

$$\frac{d}{dx}[\sin x] =$$

$$\frac{d}{dx}[b^x] =$$

$$\frac{d}{dx}[\cos x] =$$

$$\frac{d}{dx}[\tan x] =$$

$$\frac{d}{dx}[\sin^{-1} x] =$$

$$\frac{d}{dx}[\cos^{-1} x] =$$

$$\frac{d}{dx}[\sec^{-1} x] =$$

$$\frac{d}{dx}[\csc^{-1} x] =$$

$$\frac{d}{dx}[\tan^{-1} x] =$$

$$\frac{d}{dx}[\cot^{-1} x] =$$

$$\frac{d}{dx}[f(g(x))] =$$

2. Write out the derivative of a composite rule in words. (The Chain Rule)

CALCULUS AB
REVIEW OF DERIVATIVES

NAME _____
HOUR _____

3. Write the definition of a derivative. (Limit Formula)
4. Write the equation to find the equation of a line tangent to a curve at a point on the curve.
5. Explain the difference between average rate of change and instantaneous rate of change. Include formulas and a drawing with your description.
6. How do you show that a function is continuous at a point?
7. Give an example of implicit differentiation.
8. Explain how to find the derivative of the inverse of a function.

9. How do you use derivatives to explain when a function is increasing, decreasing, concave up or concave down.

10. Explain the first derivative test.

11. Explain the second derivative test.

12. How do you find critical points, stationary points, and inflection points?

13. How do you find cusps and points of vertical tangency?

14. Explain Rolle's Theorem and the Mean Value Theorem. Include a drawing with your description.

15. Give an example of logarithmic differentiation.

16. Explain how to find the absolute maximum and absolute minimum values of a function over a closed interval.
17. Explain how to find the absolute maximum and absolute minimum values of a function over an open interval.
18. For a particle moving in a straight line,
- Explain what does the position verses time graph tells you?
 - Explain what does the velocity verses time graph tells you?
 - Explain what does the acceleration verses time graph tell you?
 - How do you determine when the particle is speeding up or slowing down?
 - How is speed and velocity related?