

Name _____ Date _____ Per. _____

STUFF YOU MUST KNOW COLD

CALC

Objective: Demonstrate that you know cold important basic information for the ap exam

Take the derivative of the following

1. x^n
2. $\sin u$
3. $\cos 2$
4. $\ln(\sec x)$
5. $\csc x$
6. $\csc^{-1}(x/3)$
7. $\cot^{-1}(x-2)$
8. $\cot -x^2$
9. $3 \sec x$
10. $\sec^{-1}x$
11. a^x
12. $\log_a x$
13. $\tan^{-1}(\tan x)$
14. $\cos^{-1}x$
15. e^{2x^5}
16. $\sin^{-1}x$

Evaluate the following

17. $\sin^{-1} 0$
18. $\sin 30^\circ$
19. $\tan \pi$
20. What is 30 degrees in radians?
21. $\cos^{-1}(-1)$

Find the antiderivative

22. $\int \frac{1}{x^2 - 4x + 5} dx$

23. $\int_0^{\sqrt{2}} \frac{dx}{\sqrt{4-x^2}}$

24. $\int \ln x dx$

25. $\int -\sec x \tan x dx$

26. $4 \int \tan 2x dx$

27. $\int_1^e \frac{dx}{2x}$

28. $\int (x^3 - 1)^4 x^2 dx$

29. $\int_0^1 \frac{1}{2} x e^{x^2} dx$

30. State the Fundamental Theorem of Calculus

31. State the Intermediate Value Theorem

32. State the Chain Rule for Differentiation

33. Symbolically write the Quotient Rule.

34. How do you find the critical points (get at least 2 of the 3 acceptable answers)?

35. What does an inflection point signify?

36. Does the second derivative need to exist for there to be an inflection point?

37. How do you find a local maximum?

38. What are the critical points of
 $f(x) = (2x - 5)^3 (x + 4)^2$

39. Take the derivative of $\frac{6x - 11}{x + 2}$

40. $\int \frac{6x - 11}{x + 2} dx$

41. $\int \sqrt{t^2 - 1} dt$

42. Take the derivative of $\sqrt{t^2 - 1}$

43. $\int_0^1 7^x dx$

44. State the conditions of l'Hopital's Rule and the conclusions of it.

45. 0/0 is called _____
46. State the MVT (Mean Value Theorem).

47. How do you find the average velocity?