

NAME: _____ Score _____ /100

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SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION

Course Average _____

No Decimals No mixed numbers No complex fractions No boxed or circled answers**Each Question is worth 3 points.**

1. T F The number e is irrational.
2. T F For each exponential function, the y -intercept is 1.
3. T F For each exponential function, there is one x -intercept.
4. T F For each exponential function, the x -axis is a horizontal asymptote.
5. T F For each logarithm function, the x -intercept is 0.
6. T F The exponential function base e has an inverse.
7. T F The graph of the \ln function passes both the vertical and horizontal line test.
8. T F The rule for the function \exp is $\exp(x) = e^x$.
9. T F For logarithm function \ln , the y -axis is a vertical asymptote.
10. T F $\ln(xy) = \ln(x)\ln(y)$.

Complete each of the rules in Questions 11 – 20.

11. If $e^x = e^y$, then _____.

12. If $\ln(x) = \ln(y)$, then _____.

13. $e^x e^y =$ _____.

14. $\ln(x) - \ln(y) =$ _____.

15. $\ln(x^y) =$ _____.

16. $\ln(\exp(x)) =$ _____.

17. $\ln(e^x) =$ _____.

18. $\exp(\ln(x)) =$ _____.

19. $e^0 =$ _____.

20. $e^1 =$ _____.

Evaluate/simplify each of the expressions in Questions 21 – 24.

21. $\ln(e^6) = \underline{\hspace{2cm}}$.

21. $\exp(\ln(17)) = \underline{\hspace{2cm}}$.

22. $e^{\ln(4)} = \underline{\hspace{2cm}}$.

23. $\ln(\exp(9x - 5)) = \underline{\hspace{2cm}}$.

24. $\exp_2(3) = \underline{\hspace{2cm}}$.

25. Write $7 = \ln(5)$ in equivalent exponential form.

26. Write $e^2 = x + 5$ in equivalent logarithmic form.

27. Condense/simplify $\ln(x) + 2\ln(y)$.

28. Condense/simplify $\log(3x + 7) - \log(x)$

29. Expand $\ln(xy^3)$

30. Solve the equation $5e^x = 23$

31. Solve the equation $\ln(x) = 3$

32. Solve the equation $\ln(3x + 5) = 3$

33. Solve the equation $\ln(\sqrt{x + 4}) = 1$