

Math 271
Logarithmic, Exponential and Other Transcendental Functions

Solve for x:

1. $\ln(6x + 1) + \ln x = 0$

2. $2^{3x} = 5$

3. $9 - 2e^x = 7$

4. $\ln\sqrt{x+2} = 0$

Find the derivative of the function:

5. $y = \ln(5 - x)^6$

6. $y = \ln(e^x/(e^x + 1))$

7. $y = e^{\sin(x)^2}$

8. $y = \log_3 \sqrt{1 - x}$

9. $y = x^{1-x}$

10. $y = \arcsin(6x^2)$

Solve:

11. Write the equation of the tangent line to the graph of $f(x) = \ln(x^2 - 3)$ at the point where $x = 2$.

12. Given $f(x) = \sqrt{2x - 1}$, find $f^{-1}(x)$.

13. Find the $\tan(\operatorname{arcsec} x/3)$.

14. Find the derivative of the inverse function of $f(x)$ at the point $x = 2$, if $f(x) = x^3 + 2x - 1$.

15. Find the derivative of y with respect to x if $\ln x + \ln y + xy = 0$.

Solve without a calculator:

16. What is the definition of $Y = \ln x$?

17. Sketch the graph of $y = \ln x$.

18. $\arcsin(-1/2) =$

19. $\arccos(-1/2) =$

20. $\arctan 1 =$

21. $\arcsin(\sqrt{2}/2) =$

22. $\ln e^{2x} =$