Examples 5.4 – Logarithmic Functions

1. Use the properties of logarithms to expand the expression $\ln\left(\dfrac{x^3\sqrt{4x-11}}{(1+x^2)^5}\right)$.

   Solution:

2. Convert 5^x and $\log_3 x$ to base e.

   Solution:

3. Use inverse properties to solve the equation for x.

   (a) $e^{x^2-4} = 2$ (b) $\log_{10}(3x+1) = -1$

   Solution: (a)

   (b)

4. Suppose you invest $1000 in an account that earns 6% annual interest compounded monthly. Write a discrete growth model for the amount in the account after the t-th year. Then determine the **doubling time**, or how many months before the account doubles.

   Solution: