1. What is the domain of the following function?

\[ f(x) = \log_{10}(x - 1) \]

Answer: \( x - 1 > 0 \), so that the domain is for \( x > 1 \).

2. Condense the logarithmic expression.

\[ \ln(x) - 3\ln(x + 1) \]

Answer: \( \ln(x) - \ln(x + 1)^3 = \ln(x/(x + 1)^3) \).

3. Sketch the inverse function of the given

\[ f(x) = 3^x \]

Answer: The inverse function of \( f(x) = 3^x \) is \( y = \log_3 x \). The graph is the reflection of \( f(x) = 3^x \) to the \( y = x \).

4. Solve for \( x \).

\[ \ln(2x - 1) = 0 \]

Answer: By the definition of the log, the equation is equivalent to \( 2x - 1 = e^0 \), so \( 2x - 1 = 1 \). Thus \( x = 1 \).