Questions:

1. Find all $x$ satisfying

$$\ln(-x + 1) + \ln(6) = e$$

2. Consider

$$f(x) = e^{x \ln(x + 2)}.$$  

(a) Find the domain of $f$.
(b) Find all real $x$ so that $f(x) = 1$.

3. Find all real $x$ satisfying

$$e^{2x} + e^x - 6 = 0.$$  

4. In this problem you will prove the identity

$$\log_b(xy) = \log_b(x) + \log_b(y)$$

as seen in class. First let $z_1 = \log_b(x)$ and $z_2 = \log_b(y)$. Rewrite these two equations using exponents instead of logarithms. Use your knowledge of exponent rules to manipulate the equations until you achieve $z_1 + z_2 = \log_b(xy)$. Make sure that you explain each step.