1- Find the domain of $f(x) = \log_2(\sqrt{x - 2})$.

2- Given the function $f(x) = -\ln(x - 1) + 1$:

a. Find the domain and the range of $f(x)$.

b. Find the vertical asymptote of $f(x)$.

3- Solve the equation $e^{\ln(x^2 - 2x)} = 8$.

4- Write the logarithmic equation $\log 1000 = 3$ in exponential form.