Here is an example from the lecture. Your problem is in the next column.

- Solve for $x$: $\log_2 4x - \log_2 3 = \log_2 (x + 2)$

$\log_2 4x - \log_2 (x + 2) = \log_2 3$

$\log_2 \frac{4x}{x + 2} = \log_2 3$

$2^{\log_2 \frac{4x}{x + 2}} = 2^{\log_2 3}$

$\frac{4x}{x + 2} = 3$

$4x = 3x + 6$

$x = 6$

Validity check for $x = 6$
Substitute 6 into the original equation.
$\log_2 4x - \log_2 3 = \log_2 (x + 2)$

This gives
$\log_2 (4 \cdot 6) - \log_2 3 = \log_2 (6 + 2)$

All logarithms have positive arguments. Hence they are defined and the solution is valid.

3. Solve for $x$: $\ln(1 - x) - \ln 6 = -\ln(2 - x)$. Show your work. The solution(s) must be valid. Write "none" if neither solution is valid.

Get the terms involving $x$ on the left, everything else (the $\ln 6$) on the right.

Combine the logarithms into a single logarithm.

Exponentiate both sides to eliminate the logarithms.

Multiply out. For this problem, the result should be a quadratic equation. To solve, get everything on the left, 0 on the right. Then factor.

There should be two solutions: a positive digit and a negative digit.
Determine the validity of each solution.
Substitute each solution into the original equation.
$\ln(1 - x) - \ln 6 = -\ln(2 - x)$

If all logarithms have positive arguments, they are all defined and the solution is valid. If some logarithm is undefined, the solution is invalid.