

The fraction $\frac{243x}{27y}$ is correctly simplified to $\frac{9x}{y}$. However, this does not use any of the properties of logarithms, and you can simplify $\log_3 \frac{9x}{y}$ further. You can use the quotient rule to rewrite it as $\log_3 9x - \log_3 y$. Rewrite further, using the product property on the first term.