Let b , R, and S are positive real numbers with $b \neq 1$, and c any real number

- $\log_b(RS) = \log_b R + \log_b S$
- $\log_b\left(\frac{R}{S}\right) = \log_b R - \log_b S$
- $\log_b R^c = c \log_b R$

Assuming x, y and z are positive, use properties of logarithms to write the expression as a **single** logarithm

A) $\log x + \log 6$

$\log 6x$

B) $\ln x - \ln 6$

$\ln \frac{x}{6}$

C) $\frac{1}{4}\log x$

$\log x^{1/4}$

D) $6\log x - \frac{1}{2}\log y$

$\log x^6 - \log y^{1/2}$

$\log \frac{x^6}{y^{1/2}} = \log \frac{x^6}{\sqrt{y}}$

E) $5\log(x^2y) + 3\log(y^2z)$

$\log(x^2y)^5 + \log(y^2z)^3$

$\log x^{10}y^5 + \log y^6z^3$

$\log x^{10}y^5y^6z^3 \Rightarrow \log x^{10}y^{11}z^3$

F) $\ln x^5 - 2\ln(xy) = \ln x^5 - \ln(xy)^2$

$\ln x^5 - \ln x^2y^2$

$\ln \frac{x^5}{x^2y^2}$

$\ln \frac{x^3}{y^2}$