ZHEM, 10. 1. 2022

1. $\log\left(\frac{x^{-3}y^4}{z^{-5}w^6}\right) = \log\left(x^{-3}y^4z^5w^{-6}\right)$

$= \log(x^{-3}) + \log(y^4) + \log(z^5) + \log(w^{-6})$

$= -3\log x + 4\log y + 5\log z - 6\log w$

2. $\log\sqrt[3]{\frac{x^2y^{-3}}{z^4w^{-5}}} = \log\left(\frac{x^2y^{-3}}{z^4w^{-5}}\right)^{\frac{1}{3}}$

$= \log\left(\frac{x^{\frac{2}{3}}y^{-1}}{z^{\frac{4}{3}}w^{-\frac{5}{3}}}\right) = \log\left(x^{\frac{2}{3}}y^{-1}z^{-\frac{4}{3}}w^{\frac{5}{3}}\right)$

$= \log\left(x^{\frac{2}{3}}\right) + \log\left(y^{-1}\right) + \log\left(z^{-\frac{4}{3}}\right) + \log\left(w^{\frac{5}{3}}\right)$

$= \frac{2}{3}\log x - \log y - \frac{4}{3}\log z + \frac{5}{3}\log w$