3. $5\log x - 3\log y - 7\log z + 4\log w$

$= \log(x^5) + \log(y^{-3}) + \log(z^{-7}) + \log(w^4)$

$= \log(x^5 y^{-3} z^{-7} w^4)$

4. $\frac{5}{3}\log x - \frac{1}{3}\log y - \frac{4}{3}\log z$

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

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

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

$= \log\left(\sqrt[3]{\frac{x^5}{yz^4}}\right)$