Problem 1 *Use rules of logarithms to expand the following expression completely.*

$$\log\left[\left(\frac{\frac{r^3}{yz^6}}{\frac{r^2x^2}{z}}\right)^{-5}\cdot\left(\frac{\frac{1}{r^5x^3y^6z^3}}{\frac{r^2y^2z^5}{x^3}}\right)^{1}\right] = \boxed{10}\log(x)+\boxed{-3}\log(y)+\boxed{17}\log(z)+\boxed{-12}\log(r)$$

Feedback(*`attempt`*): *Begin by trying to simplify the interior part without even considering the Log. Once you get the argument simplified down to something like $x^{-32}y^0z^{-9}r^14$, then replace the "Log" part and use log rules to break up the argument into a sum of logs; e.g. $\log(x^{-32}y^0z^{-9}r^{14}) = \log(x^{-32}) + \log(y^0) + \log(z^{-9}) + \log(r^{14})$ and finally, use property of logs to pull down the exponent as a coefficient in front of the logs to get the answers.*

Problem 2 *Use rules of logarithms to expand the following expression completely.*

$$\log\left[\left(\frac{\frac{rx^2y^4}{z^4}}{\frac{r^6z^4}{x^2y^2}}\right)^{2}\cdot\left(\frac{\frac{r^6z^4}{x^5y^6}}{\frac{r^6y^5}{x}}\right)^{1}\right] = \boxed{4}\log(x)+\boxed{1}\log(y)+\boxed{-12}\log(z)+\boxed{-10}\log(r)$$

Feedback(*`attempt`*): *Begin by trying to simplify the interior part without even considering the Log. Once you get the argument simplified down to something like $x^{-32}y^0z^{-9}r^14$, then replace the "Log" part and use log rules to break up the argument into a sum of logs; e.g. $\log(x^{-32}y^0z^{-9}r^{14}) = \log(x^{-32}) + \log(y^0) + \log(z^{-9}) + \log(r^{14})$ and finally, use property of logs to pull down the exponent as a coefficient in front of the logs to get the answers.*

Problem 3 *Use rules of logarithms to expand the following expression completely.*

$$\log\left[\left(\frac{\frac{y^5}{r}}{\frac{x^5}{ry^5z^2}}\right)^{2}\cdot\left(\frac{\frac{r^5xy^6}{z^2}}{\frac{y^3}{r^2x^2}}\right)^{4}\right] = \boxed{2}\log(x)+\boxed{32}\log(y)+\boxed{-4}\log(z)+\boxed{28}\log(r)$$

Feedback(*`attempt`*): *Begin by trying to simplify the interior part without even considering the Log. Once you get the argument simplified down to something like $x^{-32}y^0z^{-9}r^14$, then replace the "Log" part and use log rules to break up the argument into a sum of logs; e.g. $\log(x^{-32}y^0z^{-9}r^{14}) = \log(x^{-32}) + \log(y^0) + \log(z^{-9}) + \log(r^{14})$ and finally, use property of logs to pull down the exponent as a coefficient in front of the logs to get the answers.*

Problem 4 *Use rules of logarithms to expand the following expression completely.*

$$\log\left[\left(\frac{\frac{x^3}{r^5yz}}{\frac{x^3yz^4}{r^4}}\right)^{-6}\cdot\left(\frac{\frac{yz^4}{r^4x^4}}{\frac{r^4z^2}{x^2y^4}}\right)^{1}\right]=\boxed{-2}\log(x)+\boxed{17}\log(y)+\boxed{32}\log(z)+\boxed{-2}\log(r)$$

Feedback(*`attempt`*): *Begin by trying to simplify the interior part without even considering the Log. Once you get the argument simplified down to something like* $x^{-32}y^0z^{-9}r^14$*, then replace the "Log" part and use log rules to break up the argument into a sum of logs; e.g.* $\log(x^{-32}y^0z^{-9}r^{14}) = \log(x^{-32}) + \log(y^0) + \log(z^{-9}) + \log(r^{14})$ *and finally, use property of logs to pull down the exponent as a coefficient in front of the logs to get the answers.*