

$$7) \ln(a) = 2$$

$$\ln(b) = 3$$

$$\ln(c) = 5$$

$$a) \ln\left(\frac{a^2}{b^2 \cdot \frac{1}{c^2}}\right) = \ln\left(\frac{2^2}{3^2 \cdot \frac{1}{5^2}}\right) = \ln\left(\frac{4}{\frac{1}{9} \cdot \frac{1}{25}}\right) = \ln\left(\frac{4}{\frac{1}{225}}\right)$$

$$= \ln(4 \cdot 225) = \ln 900 = 2 \ln(30)$$

$$b) \ln\left(\frac{1}{c}\right) \cdot \ln^2\left(\frac{a}{\frac{1}{b^2}}\right) = \ln\left(\frac{1}{5}\right) \cdot \ln^2\left(\frac{2}{\frac{1}{3^2}}\right) = \ln\left(\frac{1}{5}\right) \cdot \ln^2\left(\frac{2}{\frac{1}{9}}\right)$$

$$= \ln\left(\frac{1}{5}\right) \cdot \ln^2(18) = -\ln(5) \cdot \ln^2(18)$$