Bellwork Alg 2B Tuesday, October 31, 2017

Write each as a single logarithm. Make sure answer have only whole number exponents.

1. $9\log_2 A - \frac{1}{4}\text{LOG}_2 B^2 + 5\text{LOG}_2 C$

2. $7\ln\frac{1}{F^2} - 2\ln G^{-2} - 0.7\ln H$

3. $\frac{1}{4}\log M^{10} + 3(\log N^{-\frac{1}{6}} - 2\log Q)$

Write as a single logarithm then evaluate.

5. $2\log_4 6 + \frac{1}{2}\log_4 64 - \frac{1}{2}\log_4 81 - 4\log_4 2$

6. $\frac{1}{4}\log_6 81 - (2\log_6 2 + 3\log_6 3)$

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Write each as a single logarithm. Make sure answer have only whole number exponents.

1. $9\log_2 A - \frac{1}{4}\log_2 B^2 + 5\log_2 C$

$= \log_2 A^9 - \log_2 (B^2)^{1/4} + \log_2 C^5$

$= \log_2 A^9 - \log_2 B^{1/2} + \log_2 C^5$

$= \log_2 \frac{A^9 C^5}{\sqrt{B}}$

2. $7\ln\frac{1}{F^2} - 2\ln G^{-2} - 0.7\ln H$

$= \ln\left(\frac{1}{F^2}\right)^7 - \ln G^{-4} - \ln H^{7/10}$

$= \ln \frac{\frac{1}{F^{14}}}{G^{-4} H^{7/10}}$

$= \ln \frac{G^4}{F^{14}\sqrt[10]{H^7}}$

3. $\frac{1}{4}\log M^{10} + 3(\log N^{-\frac{1}{6}} - 2\log Q)$

$= \log (M^{10})^{1/4} + 3\log N^{-\frac{1}{6}} - 6\log Q$

$= \log M^{5/2} + \log N^{-\frac{1}{2}} - \log Q^6$

$= \log \frac{M^{5/2} N^{-1/2}}{Q^6} = \log \frac{\sqrt{M^5}}{\sqrt{N}\, Q^6}$

Write as a single logarithm then evaluate.

5. $2\log_4 6 + \frac{1}{2}\log_4 64 - \frac{1}{2}\log_4 81 - 4\log_4 2$

$= \log_4 6^2 + \log_4 \sqrt{64} - \log_4 \sqrt{81} - \log_4 2^4$

$= \log_4 \left(\frac{36 \cdot 8}{9 \cdot 16}\right)$

$= \log_4 2 = \frac{1}{2}$

$4^? = 2$

$\sqrt{4} = 2$

$4^{1/2} = 2$

6. $\frac{1}{4}\log_6 81 - (2\log_6 2 + 3\log_6 3)$

$= \log_6 \sqrt[4]{81} - \log_6 2^2 - \log_6 3^3$

$= \log_6 \frac{3}{4 \cdot 27}$

$= \log_6 \left(\frac{1}{36}\right) = -2$

$6^? = \frac{1}{36}$

$6^? = \frac{1}{6^2}$