MAC 1105

Properties of Logarithms

Express as a sum of logarithms.

1) $\log_r 8T$

Express as a product.

2) $\log_{14} x^{14}$

3) $\ln y^5$

Express as a difference of logarithms.

4) $\log_8 \frac{8}{9}$

5) $\log_b \frac{5}{w}$

Express in terms of sums and differences of logarithms.

6) $\log_a 3x^4yz^5$

7) $\log_{10} \frac{9\sqrt{r}}{s}$

Express as a single logarithm and simplify, if possible.

8) $\frac{1}{2}\log_a x + 4\log_a y - 2\log_a x$

9) $\ln(x^2 - 81) - \ln(x + 9)$

10) $\ln w - 3[2\ln(w - 5) - \ln(w + 5)]$

Simplify.

11) $\ln e^7$

12) $10^{\log t}$

Answer Key
Testname: UNTITLED1.TST

1) Answer: $\log_r 8 + \log_r T$
2) Answer: $14 \log_{14} x$
3) Answer: $5 \ln y$
4) Answer: $1 - \log_8 9$
5) Answer: $\log_b 5 - \log_b w$
6) Answer: $\log_a 3 + 4\log_a x + \log_a y + 5\log_a z$
7) Answer: $\log_{10} 9 + \frac{1}{2} \log_{10} r - \log_{10} s$
8) Answer: $\log_a \left(\frac{y^4}{x^{3/2}} \right)$
9) Answer: $\ln (x - 9)$
10) Answer: $\ln \frac{w(w+5)^3}{(w-5)^6}$
11) Answer: 7
12) Answer: t