Answer on Question #44469– Math–Algebra

Question:

$\ln(r^8 s^3 \sqrt[8]{r^2 s^6})$ is equal to ??

Solution.

We will use the following laws of logarithms

- $\ln ab = \ln a + \ln b$
- $\ln a^b = b \ln a$

And the following property

- $\sqrt[b]{x^a} = x^{\frac{a}{b}}$

So, we get:

$$\ln\left(r^8 s^3 \sqrt[8]{r^2 s^6}\right) = \ln r^8 + \ln s^3 + \ln \sqrt[8]{r^2 s^6} = 8\ln r + 3\ln s + \ln r^{\frac{2}{8}} + \ln s^{\frac{6}{8}} =$$

$$= 8\ln r + 3\ln s + \frac{1}{4}\ln r + \frac{3}{4}\ln s.$$

Answer. $\ln\left(r^8 s^3 \sqrt[8]{r^2 s^6}\right) = 8\ln r + 3\ln s + \frac{1}{4}\ln r + \frac{3}{4}\ln s.$