Math 130 - Quiz 11

November 20, 2019

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (5 points) Radioactive radium–226 has a half-life of 1600 years. Use the exponential decay model, $P(t) = P_0 a^t$, to determine how much of a 10-gram sample will remain after 975 years.

2. (5 points) Determine the exact value of each logarithm. **Show work or explain.**

   (a) $\log_5 125$

   (b) $\log_{1/2} 64$

   (c) $\ln \sqrt{e}$

Turn over.

3. (2 points) Use the logarithm laws to completely expand: $\log\left(\frac{x^5y^2}{\sqrt{z}}\right)$.

4. (2 points) Use the logarithm laws to completely condense: $4\log_2 x - \log_2 y - 3\log_2 z$

5. (1 point) Write $\log_9 137$ in terms of natural logarithms. Then use your calculator to compute the value.