

Standard #12 Model Assessment Items

Computational and Procedural Skills

1. Evaluate the following expressions:

A. $(-27)^{2/3}$

B. $16^{-3/4}$

2. Use properties of exponents to simplify $\frac{(2x^{2/5}y^{-1/3})^5}{x^2y}$

Conceptual Understanding

1. Explain what happens if a negative value is raised to a rational exponent in the case of an even denominator and an odd denominator.
2. Graph $y = 2^x$ using a table of values.
3. Using the graph of $y = 2^x$, in #2, identify any intercepts, asymptote(s), and determine if this is a graph of a function.

Problem Solving/Application

1. Basal metabolic rate (BMR) is the number of calories per day a person needs to maintain life. A person's basal metabolic rate $B(w)$ in calories per day can be estimated with the function $B(w) = 70w^{3/4}$, where w is the person's weight in kilograms. Use this information to calculate the BMR for a person who weighs 81 kilograms.
2. 50 grams of radioactive material has been found in a local pond and has led to the presence of radioactive debris decaying at a rate of 6% each week. Find how much debris still remains after 10 weeks. Use $y = 50(2.7)^{-0.06t}$ where t represents the number of weeks since the find.