

Name _____

Cracking the Code: How Differential Equations Solve Real-World Mysteries

Open-Ended Response Answer Key

1. Differential equations are used in engineering to model stresses, strains, and vibrations in structures, ensuring they can withstand various forces and environments.
2. Differential equations help economists model complex economic systems, analyze trends, and forecast future developments, enabling informed decision-making in areas such as monetary policy and investment strategies.
3. Accurate weather predictions are crucial for public safety, disaster preparedness, and planning various activities, from agriculture to transportation.
4. By modeling energy consumption patterns and factors affecting energy supply, such as weather conditions and demand fluctuations, differential equations can help optimize energy production, distribution, and usage, leading to more efficient energy management in cities.

