

Not only can we solve problems using differential equations, we can model real-world situations to differential equations in order to find solutions

Goal

1. Model real-world scenarios using differential equations.

There are numerous real world problems that can be modeled and solved by using differential equations. Here is one from the world of business.

A company earns revenue at a continuous 4% yearly of its net worth. Simultaneously, the payroll for the year is 100 million paid out on a continuous basis throughout the year.

1. Write a differential equation that models either the profit (+ change) or loss (- change) of the company in millions of dollars which governs the net worth, W .
2. Given an initial worth of the company, W_0 , find an equation for the worth of the company in term of years of operation.
3. Determine the equilibrium point at which there will be no profit or loss unless something else changes.

Additional problems: Exercises 12, 13, and 20