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equations in mathematics and the physical sciences. For example, I show how ordinary differential equations arise in classical physics from the fun-damental laws of motion and force. This discussion includes a derivation of the Euler-Lagrange equation, some exercises in electrodynamics, and an extended treatment of the perturbed Kepler problem.

Hassan and Zakari ([HZ18]) studied the first order ordinary differential equations and discovered that it has many application in temperature problems which leads to the use of Newton's law of

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An ordinary differential equation (ODE) is an equation that involves some ordinary derivatives (as opposed to partial derivatives) of a function. Often, our goal is to solve an ODE, i.e., determine what function or functions satisfy the equation. If you know what the derivative of a function is, how can you find the function itself?

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modelling the growth of diseases, to demonstrate the motion of pendulum and movement of electricity.

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In mathematics, a differential equation is an equation that relates one or more functions and their derivatives. In applications, the functions generally represent physical quantities, the derivatives represent their rates of change, and the differential equation defines a relationship between the two. Such relations are common; therefore, differential equations play a prominent role in many disciplines including engineering, physics, economics, and biology. Mainly the study of differential equa

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Among the topics that have a natural fit with the mathematics in a course on ordinary differential equations are all aspects of population problems: growth of population, over-population, carrying capacity of an ecosystem, the effect of harvesting, such as hunting or fishing, on a population and how over-harvesting can lead to species extinction, interactions between multiple species populations, such as predator-prey, cooperative and competitive species.

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