

Calculus is about the very large, the very small, and how things change. The surprise is that something seemingly so abstract ends up explaining the real world.

On the cover we see a time lapse photograph of the star *Polaris*, commonly known as the “North Star.” If one imagines a line drawn from the South Pole to the North Pole that extends infinitely into space, the star *Polaris* appears very nearly on this line. Hence as the Earth rotates, we the inhabitants of Earth, see the stars rotate around *Polaris*. The circular star-trails in this photograph are formed by the accumulated light, over a period of time, collected the camera’s light-sensor. This process of accumulating light can be described precisely using the language of calculus as an “integral,” something that will be introduced in this book.

The graph shown at the bottom is showing successive Taylor approximations of the function $f(x) = \sin(x)/x$. You will learn how to approximate functions with polynomials, allowing you to approximate the solution of difficult problems with ease.

