



**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.