SA'DIYYA HENDRICKSON, University of Toronto

Twinning Is Winning! A Building-Block Approach to Teaching Taylor Polynomials

Taylor polynomials are powerful mathematical tools, but for students encountering them for the first time, their construction can feel mysterious. Where did that formula come from? Why does it work?

During this presentation, I'll share how I introduce Taylor polynomials to first-year engineering calculus students through a lively mathematical journey that begins with a practical motivation: the value of simpler functions for modelling and making sense of real-world phenomena. From there, we explore why polynomials make such appealing candidates for constructing a function's "twin" that can be used to approximate it when an estimate is sufficient. Drawing on familiar mathematical building blocks, students investigate the anatomy of polynomials and uncover some surprising connections hiding in plain sight. Rather than presenting the Taylor polynomial formula at the outset, we work toward its construction as a purposeful outcome of logical thinking and mathematical exploration.

I'll take you behind the scenes of this instructional approach, sharing how playful storytelling and exploration can lead students toward the rigorous mathematical reasoning behind the construction of Taylor polynomials, while reflecting on the strategic pedagogical choices and trade-offs involved in making room for this kind of lesson within a packed curriculum and limited lecture time.