Polynomials may seem abstract but they actually serve many practical purposes and have many real-life applications. Below are some professions that use polynomials to help accomplish important tasks.

Science and Engineering

Physicists are scientists who specialize in the field of physics, which is the study of properties of matter and energy and its behaviour through space and time. By making use of mathematics, physicists are able to understand natural phenomena and formulate experimental results. The application of polynomial equations and formulas is particularly fundamental as they contribute to the discovery and identification of relationships among physical quantities.

$$E_k = \frac{1}{2}mv^2$$ ← This formula shows how the mass (m) and velocity (v) of an object are related to its kinetic energy (E_k).

Engineering in different fields, such as electrical engineering, generally requires a strong background in math. For example, to maintain the operations of electrical equipment and devices, studying the electrical circuits to figure out the relationships among the voltage, current, and resistance is required.

Ohm's Law: $I = \frac{V}{R}$ ← This formula shows how current (I), voltage (V), and resistance (R) are related.

Roller coaster designers are engineers who have a strong background in civil, structural, or mechanical engineering. The curves and loops on roller coasters can be modelled by polynomials to describe the relationship between the height of the roller coaster and the horizontal distance travelled. These designs are tested vigorously in computer simulations before being built. It takes both design and engineering skills to develop a thrill ride.

$$f(x) = 0.001x^3 - 0.12x^2 + 3.6x + 10$$
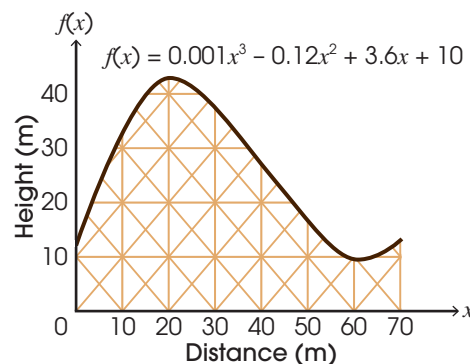
Business and Finance

Financial advisers provide their clients with financial advice in different areas, such as investments, taxes, and mortgages. They utilize software programmed to compute the required information based on polynomial formulas.

$$A = P \cdot \frac{r(1 + r)^n}{(1 + r)^n - 1}$$ ← This formula is for finding mortgage payments.

A: the mortgage payment amount per period
P: the principal amount borrowed
r: the interest rate
n: the no. of payments

An actuary is a professional who applies math and statistics to measure and manage risks and uncertainty in insurance, finance, and other industries. The actuarial concept is especially essential in the life insurance sector. For example, life insurance benefits are calculated based on contingent future events, such as the mortality rate of an individual by age, gender, and medical history. Since the money value of the benefit changes over time, the following formula is used to find the present value of a future amount.

$$FV = PV(1 + r)^n$$ ← This formula shows the value of money at different times.

FV: the future value
PV: the present value
n: the no. of compounding periods
r: the interest rate