

Department of Mathematics and Statistics
Theory of Interest – MATH 2600 / STAT 2600
Fall 2019

Prerequisites

To be successful in this course, it is important that you confirm that you have all necessary prerequisites in elementary algebra, calculus, and English.

I. Elementary algebra — full proficiency is required

1. Calculating geometric sums, such as

$$1.026 + (1.026)^2 + \cdots + (1.026)^{2018} + (1.026)^{2019}.$$

2. Expanding, factoring, and simplifying algebraic expressions, such as $(a + b)^n$ and $a^n - b^n$.
3. Working with logarithms and exponentials without guessing and without a calculator. For example:

(a) calculating $\log_{27} 81$; and

(b) solving the equation

$$3 \cdot 81^x - 82 \cdot 9^x + 27 = 0.$$

II. Differentiation and integration

4. Integrating and differentiating polynomial, logarithmic, and exponential functions, such as

(a) finding $(\ln(1 + 1.1t))'$; and

(b) calculating $\int_2^7 f(t) dt$, where $f(t) = \begin{cases} 0.1 + 0.05t & 0 \leq t \leq 3 \\ 0.4 - 0.03t & 3 < t \leq 10 \end{cases}$.

5. Finding $f(x)$ given $\frac{f'(x)}{f(x)}$.

You may want to review your lecture notes and textbook from first year calculus.

III. English — full proficiency is required (way more than TOEFL/ESL)

6. Solving word problems, such as: “Celina is offering to sell her laptop for \$1,200. Joel is interested in buying Celina’s laptop, but finds it too expensive. After some haggling, Celina agrees to give Joel a 15% discount. Joel will be paying Celina using a payment processor that charges 2.9% plus \$0.30 per transaction. How much will the laptop cost Joel if he bears the transaction fees?”
7. Getting jokes: “Question: A photon is travelling by air from Halifax to Toronto. How much baggage fee does it have to pay? Answer: None. It is travelling light.”