

Chapter 3.2: Derivatives of Exponential Functions

Calculus I

College of the Atlantic. October 13, 2022

Determine the derivative of the following functions:

1. $f(x) = 4^x$

2. $f(x) = 5(2)^x$

3. $f(x) = x^2 + 2^x$

4. $f(x) = 17 + 42\sqrt{x} - 9^x$

5. $f(x) = \pi^x + x^\pi + e^x + e^\pi + \pi^e + x^\pi$

6. $f(x) = \frac{2x^3 + xe^x}{x}$

7. $f(x) = xe^x$

A small college is growing¹ at a rate of 4% a year. In 2020 the college has 350 students.

1. Write down a formula for the number of students at the college as a function of the years since 2020.
2. What is the enrollment in 2025?
3. What is the rate of growth in 2025?

¹This is not true. COA has no plans to grow its enrollment.