

# Chapter 3.2: Derivatives of Exponential Functions

## Calculus I

College of the Atlantic. Fall 2016

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 growing at a rate of 4% a year. In 2010 the college has 325 students.

1. What is the rate of growth in 2015?
2. What is the rate of growth in 2020?