

Differential Equations for Growth and Decay

Learning Objectives

• Model and solve growth and decay applications with differential equations

Model and solve growth and decay applications with differential equations

- 1. Money invested in a particular fund grows at a rate of 7.8% compounded continuously.
 - a. Write a differential equation that models the growth of the amount of money in the fund *P*.

b. Solve the differential equation if the amount of money initially invested in the account is \$75,000.

c. How much money will be in the account after 2 years? Round to the nearest penny.

d. How long will it take for the money in the account to triple? Round to two decimal places.

ANSWER KEY

1. a. $\frac{dP}{dt} = 0.078P$; b. $P(t) = 75,000e^{0.078t}$; c. P(2) = \$87,661.97; d. t = 14.08 years