

Chapter 4 – Section 4.5 The Number  $e$ 

## TICKET-IN-THE-DOOR

In order to be prepared for class you must watch the module and complete the following activity. This is due first thing when you get to class.

Check your understanding:

1. Given:  $f(t) = 8.2e^{-0.9t}$ 
  - a. What is the initial value?
  - b. What is the (nominal) continuous rate?
  - c. What is the (annual) effective factor?
  - d. What is the (annual) effective rate?
2. Let  $P(t) = 1000e^{0.05t}$  give the size of a population of animals in year  $t$ . What will the population be after 17 years? Round to the nearest whole number.
3. An ant population grows at a continuous growth rate of 11.3%. If the population starts with 22,000 ants, how many ants are there after 6 months? Round your answer to the nearest ant.
4. Jeff has \$30,000. He placed \$15,000 in Bank 1 with an account earning 3.1% annual interest, compounded continuously. He also placed \$15,000 in Bank 2 with an account earning 3.6% annual interest compounded weekly. After 10 years,
  - a. How much money is in Bank 1?
  - b. How much money is in Bank 2?
5. If \$6,161 is invested at 4.5%, how much more would you have after 25 years if the interest was compounded continuously compared to compounded monthly?