Chapter 4 – Section 4.1 Introduction to the Family of Exponential Functions

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.

The general formula for an **exponential** function is _____.

Check your understanding:
1. What is the growth (or decay factor) for the following:

    a. Water usage is increasing by 3% per year

    b. A diamond mine is depleted by 1% per day

    c. A forest shrinks by 80% per century

2. Given the following initial values (at year $t = 0$) and rates, **write the formula** for Q as a function of t.

    a. Initial amount 35, decreased by 8% per year

    b. Initial amount 112.8, decreased by 23.4% per year

    c. Initial amount 5.35, increased by 0.8% per year

3. The amount in milligrams of a drug in the body t hours after taking a pill is given by $A(t) = 25(0.85)^t$

    a. What is the initial dose given?

    b. What percent of the drug leaves the body each hour?

    c. What is the amount of drug left after 10 hours? (Write answer using function notation)

4. In 2010, the population of a country was 70 million and growing at a rate of 1.9% per year. Assuming the percentage growth rate remains constant; express the population P in millions as a function of t the number of years after 2010.

5. A typical cup of coffee contains about 100mg of caffeine and every hour approximately 16% of the amount of caffeine in the body is metabolized and eliminated.

    a. Write C the amount of caffeine in the body in mg, as a function of t, the number of hours since the coffee was consumed.

    b. How much caffeine is in the body after 5 hours?

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