Name: _____   Date: _____

Learning Goal 7.1	Applying one or more transformations to an exponential function, including translations, stretches and reflections.

An exponential function has an equation of the form $f(x) = Ab^x$, where A and b are constants and $b > 0$.

Example The population of a bacterial culture triples every hour. When the scientist observed the culture, it had already been growing for some time. She developed the equation for the population, P, after t hours as $P = 700(3)^t$, based on $t = 0$ representing the time she started her measurements. How many bacterial cells were there 2 hours before she started measuring?

Example The half-life of a radioactive element can be modelled by

$$M = M_0 \left(\frac{1}{32}\right)^{t/45}$$

where M_0 is the initial mass of the element; t is the elapsed time, in hours and M is the mass that remains after time t. Determine the half-life of the element.

Example Cobalt-60, which has a half-life of 5.3 years is used in medical radiology. A sample of 60 mg of the material is present today.

    a. Write an equation to relate the amount of colbalt-60 remaining and the number of half-life periods.

    b. What amount will be present in 10.6 years?

    c. How many years will it take for the amount of cobalt-60 to decay to 12.5% of its initial amount?

Assignment   p. 354 # 1 – 7, 11, 13, C2   Quiz Next Day!