Learning Goal(s):

1.9.1: Solve Problems Arising from Real-World Contexts

Date: _____

Exponential Growth

Ex. 1 The population, *P* million, of Alberta can be modelled by the equation $P = 2.28(1.014)^n$, where *n*, is the number of years since 1981. Assume that this pattern continues. Determine when the population of Alberta might become 4 million.

Ex. 2 In 1995, Canada's population was 29.6 million, and was growing at about 1.24% per year. Estimate the doubling time for Canada's population growth.

Exponential Decay

Note: The *half-life* for caffeine in the bloodstream is about 6 h.

The percent, *P*, of caffeine left in your body after *n* hours is represented by the equation $P = 100(0.5)^{\frac{n}{6}}$

Ex. 3 In April 1986, there was a major nuclear accident at the Chernobyl power plant in Ukraine. The atmosphere was contaminated with quantities of radioactive iodine-131, which has a half-life of 8.1 days. How long did it take for the level of radiation to reduce to 1% of the level immediately after the accident?

Solution Let *P* represent the percent of the original radiation that was present *d* days after the accident.

pp.352-353 #1(a,c),2(i,iii),3(a,b,c),4(a,b),5(a,b,c),8[blue](a,b,d),9(b,c)