

# MA 16020 LESSON 18: DIFFERENTIAL EQUATIONS: GROWTH, DECAY, SEPARATION OF VARIABLES (PROBLEM SET)

**Example 3:** A radioactive element decays with a half-life of 8 years. If a mass of the element weighs 6 pounds at  $t = 0$ , find the amount of the element after 11.9 years.

**Example 4:** Let  $y$  denote the mass of a radioactive substance at time  $t$ . Suppose this substance obeys the equation

$$y' = -18y$$

Assume that, initially, the mass of the substance is  $y(0) = M > 0$ . At what time does half of the mass remain?