

Section 4.7 Continued

The half-life of a ding dong is 6 years. If a ding dong weighs 3.5 oz, how much will be left in 21 years?



The half-life of a substance is the time it takes for half of it to decay.

In 6 years the ding dong will weigh half of what it weighs now.

$$A = 3.5e^{kt}$$

$(6, 1.75)$
 $\uparrow \quad \uparrow$
 $t \quad A$

$$1.75 = 3.5e^{k \cdot 6}$$

$$0.5 = e^{6k}$$

$$\ln 0.5 = 6k$$

$$\frac{\ln 0.5}{6} = k$$

$$k = -0.1155$$

$$k = \frac{\ln 0.5}{\text{half-life}}$$

$$A = 3.5e^{-.1155t}$$

$$A = 3.5e^{-.1155(21)}$$

$$A = 0.31 \text{ oz}$$

p347 1 (skip c), 5, 7, 9, 11a

7) $(0, 5000)$

$(1.5, 10000)$

$$A = 5000e^{kt}$$

$$10000 = 5000e^{1.5k}$$

$$2 = e^{1.5k}$$

$$\ln 2 = 1.5k$$

$$k = .462$$

$$A = 5000e^{.462t}$$

$$A = 5000e^{.462 \cdot 3.5}$$

$$A = 25,190$$

