

#2

$$a) P = 12000(1.023)^t$$

$$b) P(3.5) = 12000(1.023)^{3.5} = 12994$$

$$c) \frac{20000}{12000} = \cancel{12000}(1.023)^t$$

$$\frac{5}{3} = 1.023^t$$

$$\ln(5/3) = t \cdot \ln 1.023$$

$$t = \frac{\ln(5/3)}{\ln 1.023} = 22.5 \text{ yrs}$$

#3 (a) $m = 100 \cdot b^t$

$$50 = 100 \cdot b^{330}$$

$$\frac{1}{2} = b^{330}$$

$$b = \left(\frac{1}{2}\right)^{\frac{1}{330}} = 0.9979 = 1 + r$$

$$r = -0.002098$$

$$(h) m = 100 (0.9979)^t$$

$$(k) m(365) = 100 (0.9979)^{365} = 46.4 \text{ g}$$

$$(d) 70 = 100 (0.9979)^t$$

$$0.7 = 0.9979^t$$

$$\ln 0.7 = t \cdot \ln 0.9979$$

$$t = \frac{\ln 0.7}{\ln 0.9979} = 169.7 \text{ days}$$

Ex. For a certain radioactive substance you start with 100g and after 12 days you have 72g remaining. Find the half-life.

$$m = 100 \cdot b^t$$

$$72 = 100 \cdot b^{12}$$

$$0.72 = b^{12}$$

$$b = 0.72^{\frac{1}{12}} = 0.97300$$

$$m = 100 (0.97300)^t$$

$$50 = 100 (0.973)^t$$

$$\frac{1}{2} = 0.973^t$$

$$\ln\left(\frac{1}{2}\right) = t \cdot \ln 0.973$$

$$t = \frac{\ln \frac{1}{2}}{\ln 0.973} = 25.3 \text{ days}$$

#4 $P = a \cdot b^t$ $b = 1+r = 1-0.15$

people
who have
not heard

$$P = 1800 \cdot (0.85)^t$$

b) 799 students $P(5) = 1800(0.85)^5$

c) 4.27 days

$$900 = 1800(0.85)^t$$

$$0.5 = 0.85^t$$

$$\ln 0.5 = t \cdot \ln 0.85$$

$$t = \frac{\ln 0.5}{\ln 0.85} = 4.27 \text{ days}$$

Thursday 11-2 begin review

Tuesday 11-7 Go over review

Thursday 11-9 TEST Logs + Exp

