

Page 113 Exer 3

$$f(x) = 2x + 5$$

linear (No x^2
No x in exponent)

FRI 3 MAY 2019

$$g(x) = (x-2)^2 + 3$$
 Quadratic (x gets squared)

$$\boxed{h(x) = 4^x}$$
 exponential, b.c. x is in the exponent

Question:

$$f(x) = x^3 - x^2 + x - 1$$

Is f a quadratic function? No

$$\begin{array}{l} x^7 \\ x^{10^6} \end{array} \quad \begin{array}{l} x^5 \\ x^8 \end{array}$$

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Carbon-14 Dating

Exer 10 :

$$A(t) = 100 \left(\frac{1}{2} \right)^{\frac{t}{H}}$$

$$A(0) = 100 \left(\right)^0 = 100\%$$

C_{14}
Radioactive
it disintegrates

$t=0$

C_{14}

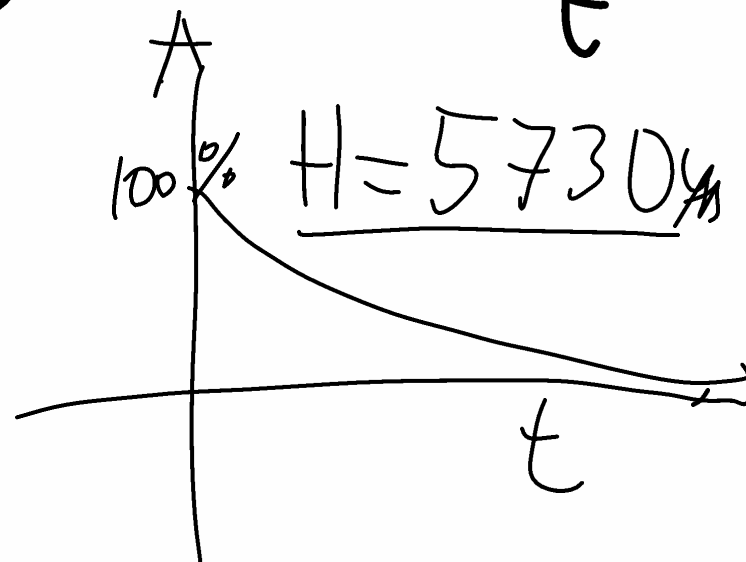
$\longrightarrow t$

After $t = H$ years: $A(t=H) =$

$$= 100 \left(\frac{1}{2} \right)^{\frac{H}{H}} = \frac{100}{2} = 50$$

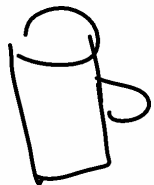
$A(0)$

100% $H = 5730 \text{ y}$



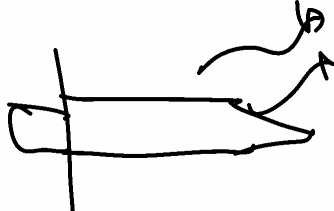
$$A(t) = 100 \left(\frac{1}{2} \right)^{\frac{t}{H}}$$

$$H = 5730 \text{ yrs}$$

a)  6000 yrs old

$$A(6000) = 100 \left(\frac{1}{2} \right)^{\frac{6000}{5730}} \approx 100 \left(\frac{1}{2} \right)^{1.047} = 48.4\%$$

$$\frac{6060}{5730} = 1 + \frac{27}{573} = 1 + \frac{9}{191} \approx 1.047$$

b)  56%

$A(t) = 56$ We need to determine t

$$A(t) = 56$$

$$\log\left(\frac{1}{2}\right)^{\frac{t}{H}} = 56$$

$$\underline{H = 5730}$$

$$\left(\frac{1}{2}\right)^{\frac{t}{H}} = 0.56 \Rightarrow$$

$$\ln\left(\frac{1}{2}\right)^{\frac{t}{H}} = \ln(0.56)$$

$$\left(\frac{1}{2}\right) \approx 0.5$$

$$\left| \frac{t}{H} \cdot \ln\left(\frac{1}{2}\right) = \ln(0.56) \right|$$

$$t = 0.84 \cdot H = 4813 \leftarrow \frac{t}{H} = \frac{\ln(0.56)}{\ln(1/2)} \approx 0.84$$