

## Homework 13 KEY

1. a) Using  $t_{1/2} = 5730$  years

$$\text{age} = 5.011 \times 10^4 \text{ years.}$$

b) using  $0.00233 \pm 2.3 \times 10^{-5}$

$$\text{age range: } \approx 50,030 \text{ } \approx 50,195$$

2. a) Using  $-\frac{\Delta A}{\Delta t}$  for  $t=0$  and  $t=0.4$

$$\text{Rate} = 1.56 \times 10^{-3} \text{ mol/L-s}$$

b) No... Rate decreases with time. (Rate constant,  $k$ , is fixed!)

c) Seeing that  $\ln A$  vs  $t$  is linear; order = 1

d) see (c) above

e)  $1.56 \text{ s}^{-1}$

f)  $R = k[A]^0 \Rightarrow R = 2.09 \times 10^{-3} \text{ mol/L-s}$