

2. (16 points) Ampicillin is a commonly prescribed antibiotic. After a person takes a 250 mg dose, the drug is absorbed into the bloodstream and then eliminated so that the level of ampicillin in the body decays exponentially. Assume that after one hour, approximately 58% of the drug remains in the body.

a. What is the hourly decay rate? What is the hourly decay factor?

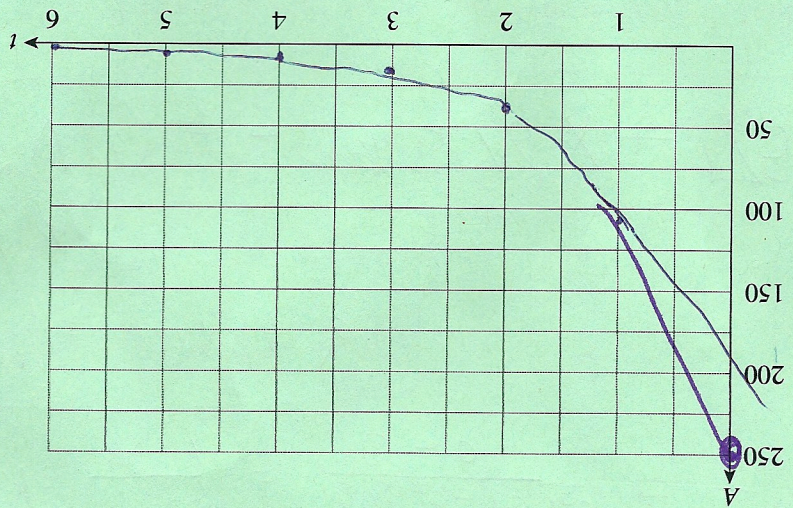
Hourly Decay rate = 0.58 → factor

Hourly Decay factor =  $1 - 0.58 = 0.42$  or 42%  
 -4 switch

b. Write a function for the amount  $A$  of ampicillin in the body in mg as a function of the number of hours,  $t$ , since the drug was taken.

$A(t) = 250(0.42)^t$   
 OK w/ a)

c. Graph the function  $A$  on the axes below over the interval  $0 \leq t \leq 6$ .



6	1.37
5	3.26
4	7.778
3	18.582
2	44.1
1	105

ATL