Advanced Math

3-1

(Day 2)

Compound Interest and Exponential Growth/Decay

Simple Interest Formula - $I = Prt$

↳ Principal – starting money

Compound Interest Formula - $A = P\left(1 + \frac{r}{n}\right)^{nt}$ → number of compounds/year

Continuously Compounded Interest Formula - $A = Pe^{rt}$

Exponential Growth/Decay - $y = ae^{kx}$ (k: constant)

$y = ae^{bx-c} + d$

a: start amount

47) Completed the table to determine the balance A for P dollars invested at rate r for t years compounded n times per year.

$P = \$2500$, $r = 12\%$, $t = 10$ yrs

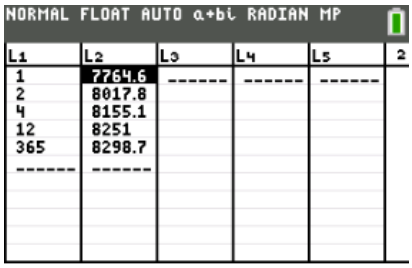
$A = P\left(1+\frac{r}{n}\right)^{nt}$

$A = 2500\left(1+\frac{.12}{n}\right)^{n\cdot 10}$

2500e^(.12*10)

$2500e^{.12\cdot 10}$

n	1	2	4	12	365	Continuous
A	$7764.6	8017.8	8155.1	8251	8298.7	$8300.29



)^(L1*10)

51) Completed the table to determine the amount of money P that should be invested at rate r to produce a final balance of \$100,000 in t years.

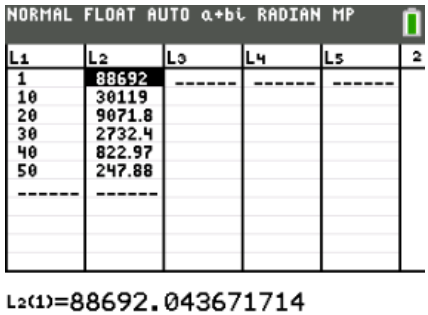
t	1	10	20	30	40	50
P						

$r = 12\%$, compounded continuously

$A = Pe^{rt}$

$100000 = Pe^{.12t}$

$\frac{100000}{e^{.12t}} = P$



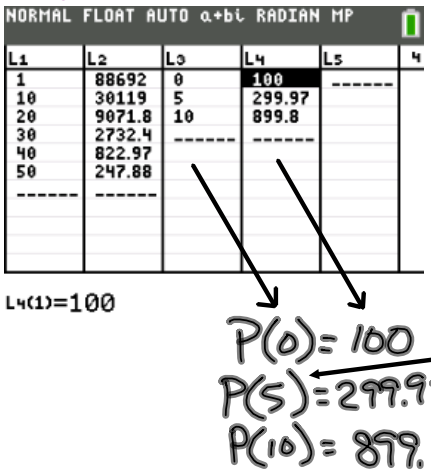
59) A certain type of bacteria increases according to the model

$$P(t) = 100e^{0.2197t}$$

starting amount

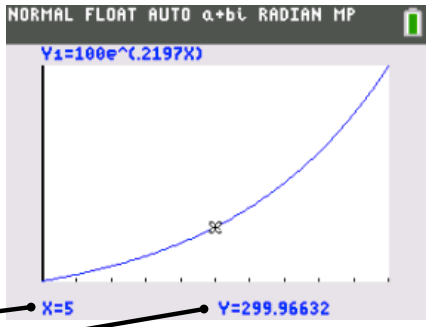
where t is the time in hours. Find $P(0)$, $P(5)$, and $P(10)$.

Using the stat editor with a formula.



P(0)= 100
P(5)=299.97
P(10)= 899.8

Or graph and trace using [0,10] as the domain.



Assignment:
pg. 307
50, 52,
53-64 all