2018 Spring Math 1414
Prof Alvarez and Prof Perez
www.alvarezmathhelp.com

Learning Communities Shared Assignment (One is not Seven)

Student name _____date 06-16-18000

A $1000 visa credit card at 24% for only 30 years will have a $20.01 minimum payment per month.

f(X) = $1000 Log (10 – (9/30)X) amount owed after X years

g(X) = $20.01(12)X amount paid in monthly payments

1 find f(0), f(1),f(2),f(3),f(4),f(5),f(10),f(15),f(20),f(25),f(30) g(0),g(4),g(30).

2 find the domain of f(X)

3 f(X) = 500 then X = years to owe $500 on the credit card

4 find f(0) – f(4) amount you paid on the credit card after 4 years

5 find (f(30) – f(20))/(30 – 20) average rate of change =

6 find a and b for C(X) = a log(10 – bX), C(0) =$60000 , C(140) = 0

find C(106) the amount you owe after X months of payments

7 find a and b for C(X) = a(2 – e^{bX}), C(0)=$60000, C(138)=377.0680054

find C(81) the amount you owe after X months of payments

8 graph f(X) Xmin = 0, Xmax = 30, Ymin= –10 and Ymax = 1000.

9 graph f(X) and g(X) Xmin=0,Xmax=30,Ymin=-10,Ymax=8000.

10 R(X) = (100 – 5X)($500 + $50X) find the max of grandma's apartments if for every $50 increase in rent 5 apartments will become empty. graph X=0,1,2,3,4,5,6,7,8,9,10

Xmin=0,Xmax=12,Ymin=-1,Ymax=60000

11 M(X) = $2000X + $4000 find M(10) tuition at the private university

12 graph C(X) = $60000 Log(10 – (9/140)X) student loan of $60000 with $600 monthly payments

X=0,12,24,36,48,60,72,84,96,108,120,132,140

Xmin =0, Xmax= 140, Ymin = -10, Ymax = 60000

Remember credit cards are your friends and one is not seven.

$f(x) = \$1000 \log\left(10 - \left(\frac{9}{30}\right)x\right)$

1.

$f(0) = 1000 \log\left(10 - \left(\frac{9}{30}\right)(0)\right)$

$f(0) = \$1000$ amount you owe after 0 years

$f(1) = \$1000 \log\left(10 - \left(\frac{9}{30}\right)(1)\right)$

$f(1) = \$986.7717343$

amount you owe after 1 year

$f(2) = \$1000 \log\left(10 - \left(\frac{9}{30}\right)(2)\right)$

$f(2) = \$973.1278536$

amount you owe after 2 years

$f(3) = \$1000 \log\left(10 - \left(\frac{9}{30}\right)(3)\right)$

$f(3) = \$959.0413923$

amount you owe after 3 years

$f(x) = \$1000 \log\left(10 - \left(\frac{9}{30}\right)x\right)$

$f(4) = \$1000 \log\left(10 - \left(\frac{9}{30}\right)(4)\right)$

$f(4) = \$944.4826722$

amount you owe after 4 years

$f(5) = \$1000 \log\left(10 - \left(\frac{9}{30}\right)(5)\right)$

$f(5) = \$929.4189257$

amount you owe after 5 years

$f(10) = \$1000 \log\left(10 - \left(\frac{9}{30}\right)(10)\right)$

$f(10) = \$845.09804$

amount you owe after 10 years

$f(15) = \$1000 \log\left(10 - \left(\frac{9}{30}\right)(15)\right)$

$f(15) = \$740.3626895$

amount you owe after 15 years

$f(x) = 1000 \log\left(10 - \left(\frac{9}{30}\right)x\right)$

$f(20) = 1000 \log\left(10 - \left(\frac{9}{30}\right)(20)\right)$

$f(20) = \$602.0599913$

amount you owe after 20 years

$f(25) = 1000 \log\left(10 - \left(\frac{9}{30}\right)(25)\right)$

$f(25) = \$397.9400087$

amount you owe after 25 years

$f(30) = 1000 \log\left(10 - \left(\frac{9}{30}\right)(30)\right)$

$f(30) = \$0$

amount you owe after 30 years

$g(x) = 20.01(12)x$ dollars

$g(0) = 20.01(12)(0)$ dollars

$g(0) = 240.12(0)$

$g(0) = \$0$

amount paid to credit card after 0 years

$g(4) = 20.01(12)(4)$ dollars

$g(4) = 240.12(4)$

$g(4) = \$960.48$

amount paid to credit card after 4 years

$g(30) = 20.01(12)(30)$ dollars

$g(30) = 240.12(30)$

$g(30) = \$7203.60$

amount paid to credit card after 30 YEARS

$f(x) = 1000 \log\left(10 - \left(\frac{9}{30}\right)x\right)$

2. find the domain

formula (domain)

$f(x) = \log(Ax+B)$

let $Ax+B > 0$

let $10 - \frac{9}{30}x > 0$

$10 - \frac{9}{30}x - 10 > 0 - 10$

$-\frac{9}{30}x > -10$

$-\frac{30}{9}\left(-\frac{9x}{30}\right) < -\frac{30}{9}(-10)$

mult by $-\frac{30}{9}$ and turn all signs around

$x < -\frac{30}{9}\left(\frac{-10}{1}\right)$

$x < \frac{300}{9}$

$x < \frac{3(100)}{3(3)}$ factor

$x < \frac{100}{3}$

OR

$\frac{100}{3}$

OR

$(-\infty, \frac{100}{3})$

domain

(3)

$f(x) = \$1000 \log(10 - (\frac{9}{30})x)$

$f(x) = 500$ find x.

Set $\#1000 \log(10 - (\frac{9}{30})x) = \#500$

$1000 \log(10 - \frac{9}{30}x) = 500$

$\frac{1000 \log(10 - \frac{9}{30}x)}{1000} = \frac{500}{1000}$ divide

$\log(10 - \frac{9}{30}x) = .5$

$\log_{10}(10 - \frac{9}{30}x) = .5$ write base in formula

$10^{.5} = 10 - \frac{9}{30}x$ rewrite

$10^{.5} - 10 = 10 - \frac{9}{30}x - 10$

$10^{.5} - 10 = -\frac{9}{30}x$

$-\frac{30}{9}(10^{.5} - 10) = -\frac{30}{9}(-\frac{9x}{30})$ mult by $-\frac{30}{9}$

$(-30/9)(10^{.5} - 10) = X$

$22.792\,4078 = X$

OR

$X = 22.792\,4078$ YEARS

YEARS it takes to owe $500 on the credit card

4. $f(x) = 1000\log(10 - (\frac{9}{30})x)$

find $f(0) - f(4) =$

$(1000\log(10 - (\frac{9}{30})(0))) - (1000\log(10 - (\frac{9}{30})(4))) =$

$(1000) - (944.4826722) =$

$1000 - 944.4826722 =$

$55.51732278 =$

after 4 years you paid $55.52 on the credit card

5. $f(x) = 1000\log\left(10 - \left(\frac{9}{30}\right)x\right)$

$\frac{f(30) - f(20)}{30 - 20}$ average rate of change

$$\frac{\left(1000\log\left(10 - \left(\frac{9}{30}\right)(30)\right)\right) - \left(1000\log\left(10 - \left(\frac{9}{30}\right)(20)\right)\right)}{30 - 20} =$$

$$\frac{(0) - (602.0599913)}{30 - 20} =$$

$$\frac{0 - 602.0599913}{30 - 20} =$$

$$\frac{-602.0599913}{10} =$$

$$-60.20599913 =$$

6. find a and b if $C(x) = a\log(10 - bx)$ and $C(0) = 60{,}000$, $C(140) = 0$.

$C(x) = a\log(10 - bx)$

$C(0) = a\log(10 - b(0)) = 60000$

$a\log(10 - 0) = 60000$

$a\log(10) = 60000$

$a(1) = 60000$

$a = 60{,}000$

$C(x) = 60{,}000\log(10 - bx)$

$C(140) = 60000\log(10 - b(140)) = 0$

$60000\log(10 - 140b) = 0$

$\frac{60{,}000\log(10 - 140b)}{60{,}000} = \frac{0}{60000}$

$\log(10 - 140b) = 0$

$\log_{10}(10 - 140b) = 0$

$10^0 = 10 - 140b$

$1 = 10 - 140b$

$1 - 10 = 10 - 140b - 10$

$-9 = -140b$

$\frac{-9}{-140} = \frac{-140b}{-140}$

$\frac{9}{140} = b$

$C(x) = 60{,}000\log\left(10 - \left(\frac{9}{140}\right)x\right)$

$C(106) = 60000\log\left(10 - \left(\frac{9}{140}\right)(106)\right)$

$= \$30192.40938$

7. Find a and b if $C(x) = a(2 - e^{bx})$ and $C(0) = \$60{,}000$, $C(138) = \$377.0680054$

$C(x) = a(2 - e^{bx})$

$C(0) = a(2 - e^{b(0)}) = 60{,}000$

$a(2 - e^0) = 60{,}000$

$a(2 - 1) = 60{,}000$

$a(1) = 60{,}000$

$a = 60{,}000$

$C(x) = 60000(2 - e^{bx})$

$C(138) = 60{,}000(2 - e^{b(138)}) = 377.0680054$

$60{,}000(2 - e^{138b}) = 377.0680054$

$$\frac{60{,}000(2 - e^{138b})}{60{,}000} = \frac{377.0680054}{60{,}000}$$

$2 - e^{138b} = .0062844668$

$2 - e^{138b} - 2 = .0062844668 - 2$

$-e^{138b} = -1.993715533$

$-1(-e^{138b}) = -1(-1.993715533)$

$e^{138b} = 1.993715533$

$\ln(e^{138b}) = \ln(1.993715533)$

$138b \ln(e) = \ln(1.993715533)$

$138b(1) = \ln(1.993715533)$

$138b = \ln(1.993715533)$

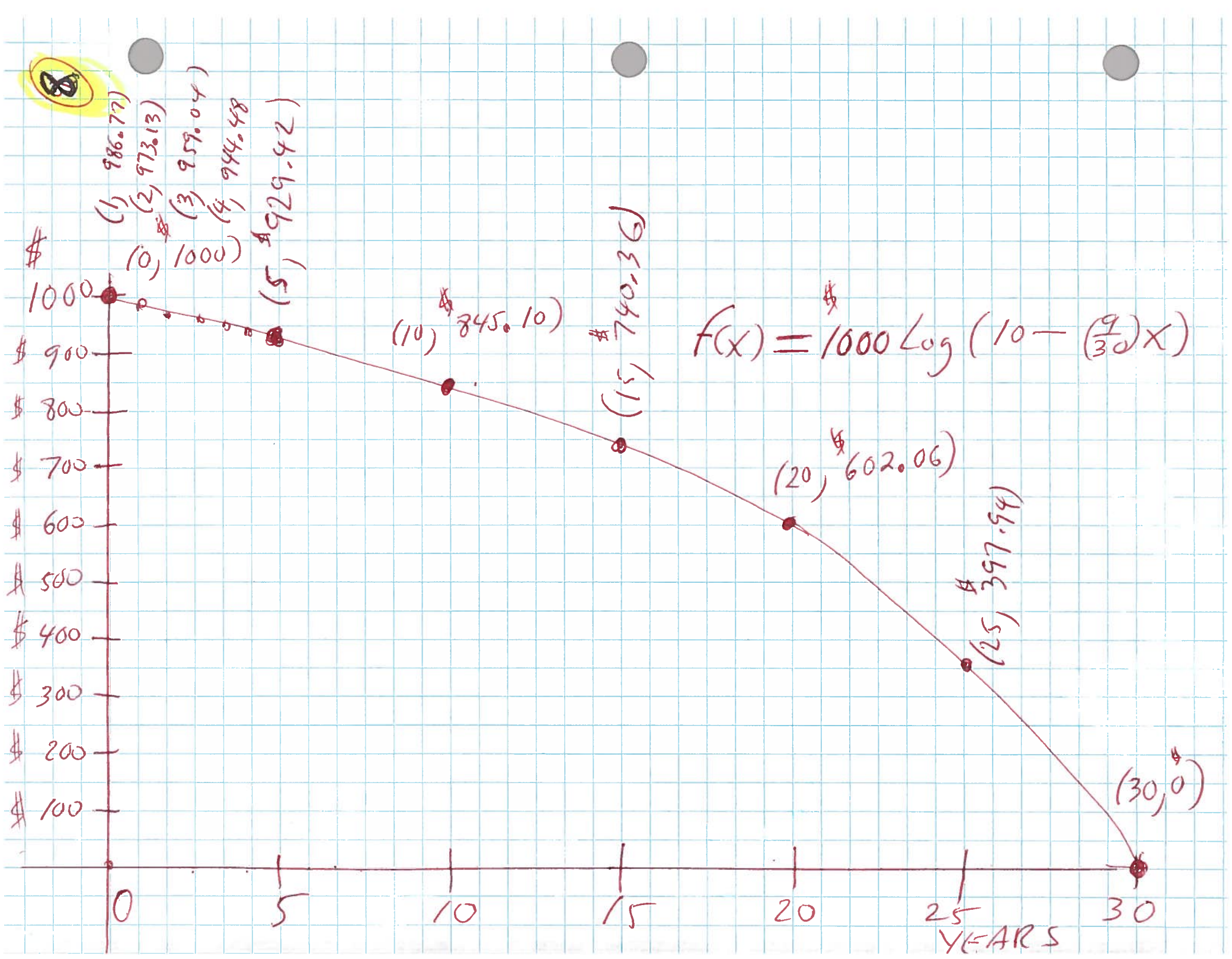
$$\frac{138b}{138} = \frac{\ln(1.993715533)}{138}$$

$b = .005$

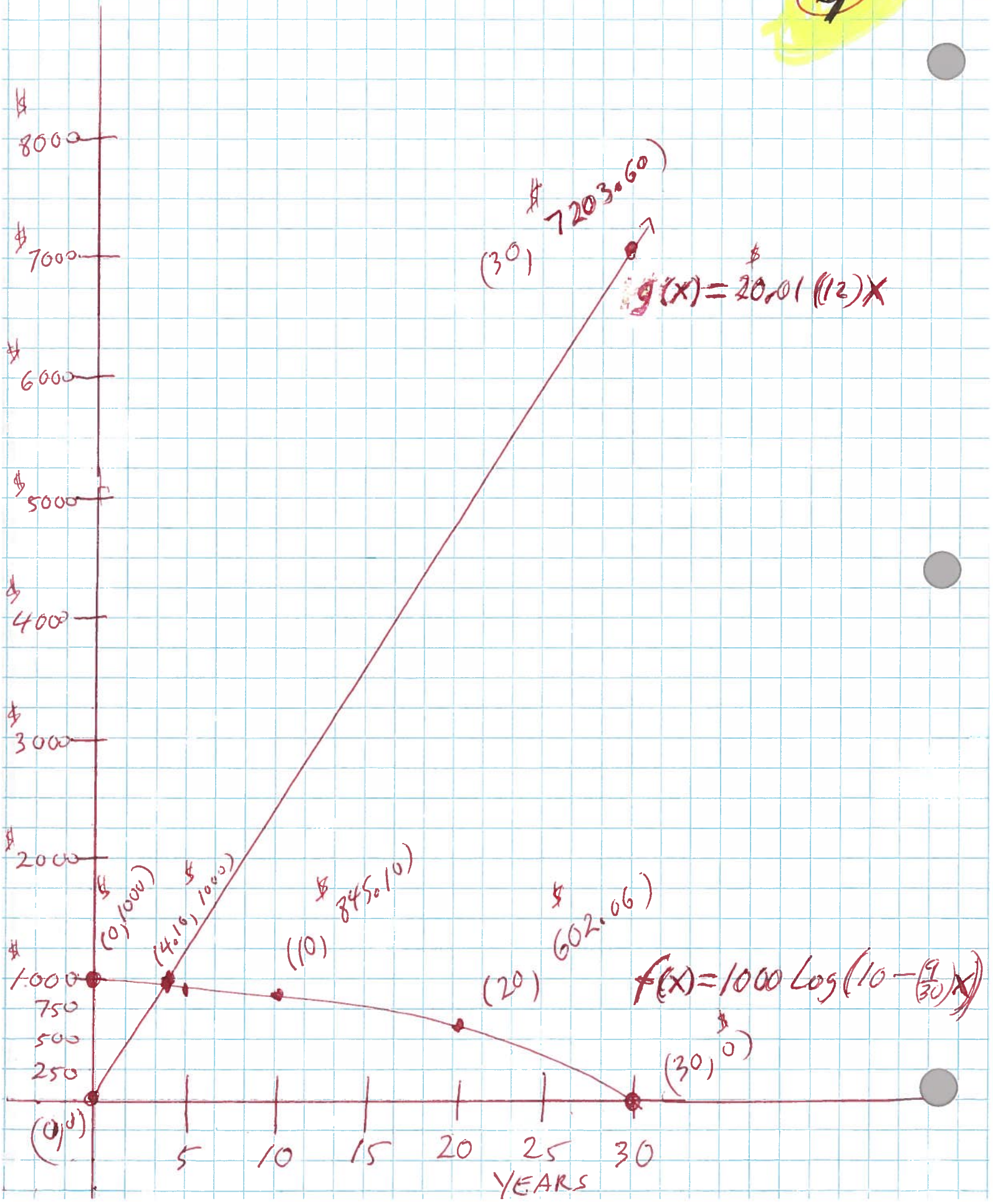
$C(x) = 60{,}000(2 - e^{.005x})$

$C(81) = 60000(2 - e^{.005(81)})$

$= \$30{,}041.85$


(1, 986.77)
(2, 973.13)
(3, 959.04)
(4, 944.48)
(5, $929.42)
(0, $1000)
(10, $845.10)
(15, $740.36)
(20, $602.06)
(25, $397.94)
(30, $0)
$f(x) = 1000 \log\left(10 - \left(\frac{9}{30}\right)x\right)$
$
$1000
$900
$800
$700
$600
$500
$400
$300
$200
$100
0
5
10
15
20
25
30
YEARS

9.


$8000
$7000
$6000
$5000
$4000
$3000
$2000
$1000
750
500
250
(0, d)
5
10
15
20
25
30
YEARS
($7203.60)
(30)
g(x) = 20.01((12)X
(0, 1000)
($4.16, 1000)
(10)
($845.10)
(20)
($602.06)
f(X) = 1000 Log(10 − (9/30)X)
(30, $0)

10. $R(x) = (100 - 5x)(500 + 50x)$

$R(x) = 50000 + 5000x - 2500x - 250x^2$

$R(x) = 50000 + 2500x - 250x^2$

$R(x) = -250x^2 + 2500x + 50000$

$a = -250, \quad b = 2500, \quad c = 50000$

To find the max find the **Vertex**

$\text{Vertex} = \left(\frac{-b}{2a}, \quad R\left(\frac{-b}{2a}\right)\right)$

$\text{Vertex} = \left(\frac{-(2500)}{2(-250)}, \quad R\left(\frac{-(2500)}{2(-250)}\right)\right)$

$\text{Vertex} = \left(\frac{-2500}{-500}, \quad R\left(\frac{2500}{-500}\right)\right)$

$\text{Vertex} = (5, \quad R(5))$

$\text{Vertex} = (5, \quad -250(5)^2 + 2500(5) + 50000)$

$\text{Vertex} = (5, \quad -250(5)(5) + 2500(5) + 50000)$

$\text{Vertex} = (5, \quad -250(25) + 2500(5) + 50000)$

Vertex = (5, -6250 + 12500 + 50000)

Vertex = (5, 6250 + 50000)

Vertex = (5, $56250)

Max

$R(x) = (100 - 5x)(500 + 50x)$ Original formula

$R(5) = (100 - 5(5))(500 + 50(5))$

$R(5) = (100 - 25)(500 + 250)$

$R(5) = (75)(750)$

$R(5) = \$56{,}250$

~~Max~~

75 apartments full at $750 each will generate the max profit of $56,250

$R(x) = (100 - 5x)(500 + 50x)$

$R(0) = (100 - 5(0))(500 + 50(0))$

$R(0) = (100 - 0)(500 + 0)$

$R(0) = (100)(500)$

$R(0) = \$50{,}000$ per month

$R(1) = (100 - 5(1))(500 + 50(1))$

$R(1) = (100 - 5)(500 + 50)$

$R(1) = (95)(550)$

$R(1) = \$52{,}250$ per month

$R(2) = (100 - 5(2))(500 + 50(2))$

$R(2) = (100 - 10)(500 + 100)$

$R(2) = (90)(600)$

$R(2) = \$54{,}000$ per month

$R(x) = (100 - 5x)(500 + 50x)$

$R(3) = (100 - 5(3))(500 + 50(3))$

$R(3) = (100 - 15)(500 + 150)$

$R(3) = (85)(650)$

$R(3) = \$55,250$ per month

$R(4) = (100 - 5(4))(500 + 50(4))$

$R(4) = (100 - 20)(500 + 200)$

$R(4) = (80)(700)$

$R(4) = \$56,000$ per month

$R(5) = (100 - 5(5))(500 + 50(5))$

$R(5) = (100 - 25)(500 + 250)$

$R(5) = (75)(750)$

$R(5) = \$56,250$ per month

$R(x) = (100 - 5x)(500 + 50x)$

$R(6) = (100 - 5(6))(500 + 50(6))$

$R(6) = (100 - 30)(500 + 300)$

$R(6) = (70)(800)$

$R(6) = \$56,000$ per month

$R(7) = (100 - 5(7))(500 + 50(7))$

$R(7) = (100 - 35)(500 + 350)$

$R(7) = (65)(850)$

$R(7) = \$55,250$ per month

$R(8) = (100 - 5(8))(500 + 50(8))$

$R(8) = (100 - 40)(500 + 400)$

$R(8) = (60)(900)$

$R(8) = \$54,000$ per month

$$R(x) = (100 - 5x)(500 + 50x)$$

$$R(9) = (100 - 5(9))(500 + 50(9))$$

$$R(9) = (100 - 45)(500 + 450)$$

$$R(9) = (55)(950)$$

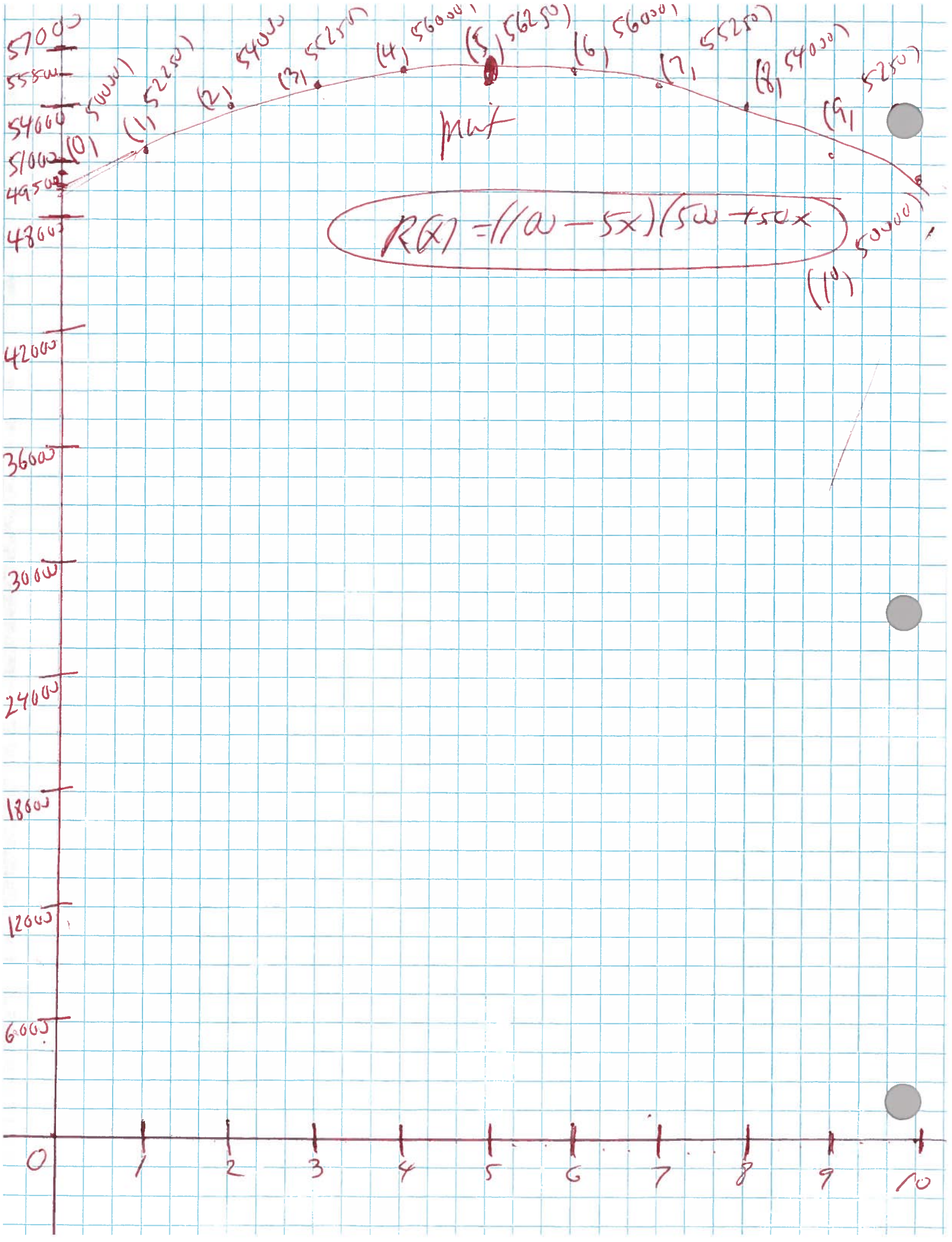
$$R(9) = \$52,250 \text{ per month}$$

$$R(10) = (100 - 5(10))(500 + 50(10))$$

$$R(10) = (100 - 50)(500 + 500)$$

$$R(10) = (50)(1000)$$

$$R(10) = \$50,000 \text{ per month}$$


5700
5550
54660
51000
49500
48600
42000
36600
30000
24000
18600
12000
6600
0
1
2
3
4
5
6
7
8
9
10
(0) 5000
(1) 5225
(2) 5400
(3) 5525
(4) 5600
(5) 5625
(6) 5600
(7) 5525
(8) 5400
(9) 5225
(10) 5000
max
R(x) = (10 − 5x)(50 + 50x

11. $M(x) = 2000x + 4000$ find $M(10)$

$M(10) = 2000(10) + 4000$

$M(10) = 20000 + 4000$

$M(10) = \$24{,}000$

Tuition for 10 hours at a private university

12. $C(x) = 60000 \log\left(10 - \left(\frac{9}{140}\right)x\right)$

$C(0) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(0)\right)$

$C(0) = \$60000$

amount you owe after 0 months

$C(12) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(12)\right)$

$C(12) = \$57908.07$

amount you owe after 12 months

$C(24) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(24)\right)$

$C(24) = \$55633.42$

amount you owe after 24 months

$C(36) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(36)\right)$

$C(36) = \$53141.05$

amount you owe after 36 months

$C(48) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(48)\right)$

$C(48) = \$50384.84$

amount you owe after 48 months

$$C(x) = 60000 \log\left(10 - \left(\frac{9}{140}\right)x\right)$$

$$C(60) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(60)\right)$$

$C(60) = \$47{,}302.22$

amount you owe after 60 months

$$C(72) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(72)\right)$$

$C(72) = \$43805.39$

amount you owe after 72 months

$$C(84) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(84)\right)$$

$C(84) = \$39{,}765.47$

amount you owe after 84 months

$$C(96) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(96)\right)$$

$C(96) = \$34{,}982.21$

amount you owe after 96 months

$$C(108) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(108)\right)$$

$C(108) = \$29{,}118.94$

amount you owe after 108 months

$$C(x) = 60000 \log\left(10 - \left(\frac{9}{140}\right)x\right)$$

$$C(120) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(120)\right)$$

$C(120) = \$21,541.32$

amount you owe after 120 months.

$$C(132) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(132)\right)$$

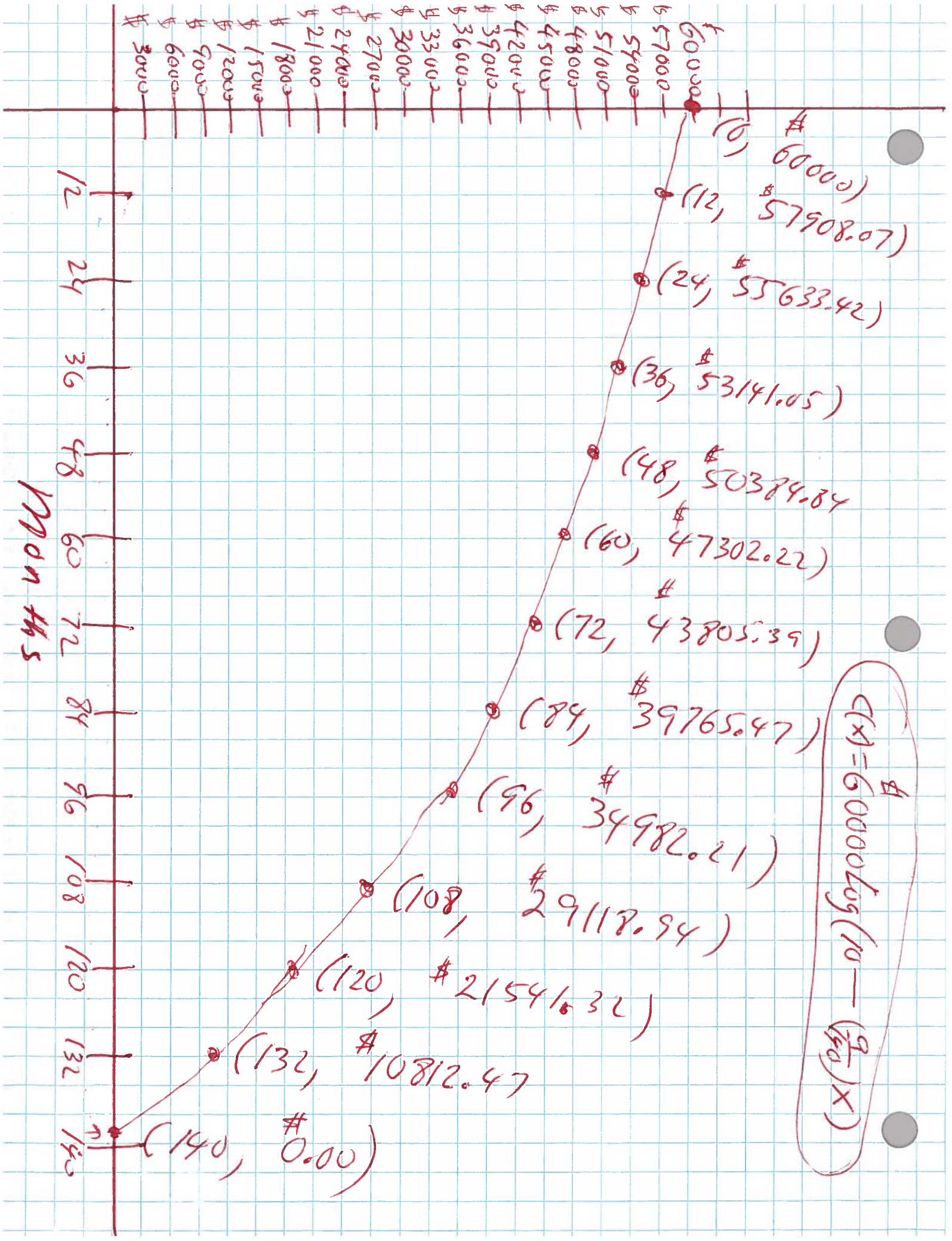
$C(132) = \$10,812.47$

amount you owe after 132 months

$$C(140) = 60000 \log\left(10 - \left(\frac{9}{140}\right)(140)\right)$$

$C(140) = \$0.00$

amount you owe after 140 months.


$60000
$57000
$54000
$51000
$48000
$45000
$42000
$39000
$36000
$33000
$30000
$27000
$24000
$21000
$18000
$15000
$12000
$9000
$6000
$3000
(0, $60000)
(12, $57908.07)
(24, $55633.42)
(36, $53141.05)
(48, $50384.84)
(60, $47302.22)
(72, $43805.39)
(84, $39765.47)
(96, $34982.21)
(108, $29118.94)
(120, $21541.32)
(132, $10812.47)
(140, $0.00)
C(x)=60000log(10−(9/140)x)
Months
12
24
36
48
60
72
84
96
108
120
132
140


FEDERAL RESERVE NOTE
AB 67698293 G
B2
THE UNITED STATES OF AMERICA
100
ONE HUNDRED DOLLARS

7 + 9 + 1

1000

29,519.00

BM3W

Ayden

Smart bird says that a $1000 credit card at 24% for 30 years with a min payment of $20.01 will cost $7203.06

Bird

5-8-17

How a credit card works.

$1000 at 24% for 10 years gives a min payment of $22.05 per month.

$A = P(1 + \frac{r}{n}) - m$

$P = 1000$

$r = 24\% = .24$

$n = 12 =$ monthly

$m = \$22.05 =$ min payment

$A = \$1000(1 + \frac{.24}{12}) - (\$22.05)$

$A = \$1000(1 + .02) - (\$22.05)$

$A = \$1000(1.02) - (\$22.05)$

$A = \$1020 - \$22.05$

$A = \$997.95$ Balance after 1st payment

$A = P(1 + \frac{r}{n}) - m$

$P = \$997.95$

$r = 24\% = .24$

$n = 12 =$ monthly

$m = \$22.05 =$ min payment

$A = \$997.95(1 + \frac{.24}{12}) - (\$22.05)$

$A = \$997.95(1 + .02) - (\$22.05)$

$A = \$997.95(1.02) - (\$22.05)$

$A = \$1017.909 - \$22.05$

$A = \$995.859$

$A = \$995.86$ Balance after 2nd payment

$1000 at 24% for 10 years)


```
U
:=P*((I/N*.01)/(1-(1+I/N*.01)^(-N*T)));
MORTIZATION FORMULA PAYMENT= $ 22.0481
MONTHLY AMORTIZATION SCHEDULE FOR A $1000.0000 LOAN
AT 24.00% COMPOUNDED 12 TIMES PER YEAR FOR 10.00 YEARS.
MONTHLY   MONTHLY     MONTHLY    TOTAL      NUMBER OF
PAYMENT   INTEREST    PRINCIPLE BALANCE    PAYMENTS
  22.05      20.00        2.05     997.95 NUMBER   1
  22.05      19.96        2.09     995.86 NUMBER   2
  22.05      19.92        2.13     993.73 NUMBER   3
  22.05      19.87        2.17     991.56 NUMBER   4
  22.05      19.83        2.22     989.34 NUMBER   5
  22.05      19.79        2.26     987.08 NUMBER   6
  22.05      19.74        2.31     984.77 NUMBER   7
  22.05      19.70        2.35     982.42 NUMBER   8
  22.05      19.65        2.40     980.02 NUMBER   9
  22.05      19.60        2.45     977.57 NUMBER  10
  22.05      19.55        2.50     975.08 NUMBER  11
  22.05      19.50        2.55     972.53 NUMBER  12
UM OF INTEREST PAID   237.1079
UM OF PRINCIPLE PAID   27.4693
NPAID PRINCIPLE       972.5307
OTAL PAID PRINCIPLE AND INTEREST     264.5772
RESS  1 RETURN  FOR MORE OUTPUT
```

YEAR 1

Amount of credit card paid.

```
NPAID PRINCIPLE       972.5307
OTAL PAID PRINCIPLE AND INTEREST     264.5772
RESS  1 RETURN  FOR MORE OUTPUT

MONTHLY AMORTIZATION SCHEDULE FOR A $1000.0000 LOAN
AT 24.00%  COMPOUNDED  12 TIMES PER YEAR FOR 10.00 YEARS.
PAYMENT   INTEREST    PRINCIPLE BALANCE    PAYMENTS
  22.05      19.45        2.60     969.93 NUMBER  13
  22.05      19.40        2.65     967.28 NUMBER  14
  22.05      19.35        2.70     964.58 NUMBER  15
  22.05      19.29        2.76     961.82 NUMBER  16
  22.05      19.24        2.81     959.01 NUMBER  17
  22.05      19.18        2.87     956.15 NUMBER  18
  22.05      19.12        2.93     953.22 NUMBER  19
  22.05      19.06        2.98     950.24 NUMBER  20
  22.05      19.00        3.04     947.19 NUMBER  21
  22.05      18.94        3.10     944.09 NUMBER  22
  22.05      18.88        3.17     940.92 NUMBER  23
  22.05      18.82        3.23     937.69 NUMBER  24
UM OF INTEREST PAID   466.8474
UM OF PRINCIPLE PAID   62.3069
NPAID PRINCIPLE       937.6931
OTAL PAID PRINCIPLE AND INTEREST     529.1543
RESS  1 RETURN  FOR MORE OUTPUT
```

YEAR 2

Amount of credit card paid.

```
UNPAID PRINCIPLE       937.6931
TOTAL PAID PRINCIPLE AND INTEREST     529.1543
PRESS  1 RETURN  FOR MORE OUTPUT
1
 MONTHLY AMORTIZATION SCHEDULE FOR A $1000.0000 LOAN
 AT 24.00%  COMPOUNDED  12 TIMES PER YEAR FOR 10.00 YEARS.
 PAYMENT   INTEREST    PRINCIPLE BALANCE    PAYMENTS
   22.05      18.75        3.29     934.40 NUMBER  25
   22.05      18.69        3.36     931.04 NUMBER  26
   22.05      18.62        3.43     927.61 NUMBER  27
   22.05      18.55        3.50     924.12 NUMBER  28
   22.05      18.48        3.57     920.55 NUMBER  29
   22.05      18.41        3.64     916.91 NUMBER  30
   22.05      18.34        3.71     913.20 NUMBER  31
   22.05      18.26        3.78     909.42 NUMBER  32
   22.05      18.19        3.86     905.56 NUMBER  33
   22.05      18.11        3.94     901.62 NUMBER  34
   22.05      18.03        4.02     897.61 NUMBER  35
   22.05      17.95        4.10     893.51 NUMBER  36
 SUM OF INTEREST PAID   687.2420
 SUM OF PRINCIPLE PAID  106.4895
 UNPAID PRINCIPLE       893.5105
 TOTAL PAID PRINCIPLE AND INTEREST     793.7315
 PRESS  1 RETURN  FOR MORE OUTPUT
```

YEAR 3

Amount of credit card paid.

```
 UNPAID PRINCIPLE       893.5105
 TOTAL PAID PRINCIPLE AND INTEREST     793.7315
 PRESS  1 RETURN  FOR MORE OUTPUT
 1
  MONTHLY AMORTIZATION SCHEDULE FOR A $1000.0000 LOAN
  AT 24.00%  COMPOUNDED  12 TIMES PER YEAR FOR 10.00 YEARS.
  PAYMENT   INTEREST    PRINCIPLE BALANCE    PAYMENTS
    22.05      17.87        4.18     889.33 NUMBER  37
    22.05      17.79        4.26     885.07 NUMBER  38
    22.05      17.70        4.35     880.72 NUMBER  39
    22.05      17.61        4.43     876.29 NUMBER  40
    22.05      17.53        4.52     871.77 NUMBER  41
    22.05      17.44        4.61     867.16 NUMBER  42
    22.05      17.34        4.70     862.45 NUMBER  43
    22.05      17.25        4.80     857.65 NUMBER  44
    22.05      17.15        4.90     852.76 NUMBER  45
    22.05      17.06        4.99     847.76 NUMBER  46
    22.05      16.96        5.09     842.67 NUMBER  47
    22.05      16.85        5.19     837.48 NUMBER  48
  SUM OF INTEREST PAID   895.7850
  SUM OF PRINCIPLE PAID  162.5237
  UNPAID PRINCIPLE       837.4763
  TOTAL PAID PRINCIPLE AND INTEREST    1058.3087
  PRESS  1 RETURN  FOR MORE OUTPUT
```

YEAR 4

Amount of credit card paid.

```
 UNPAID PRINCIPLE        837.4763
 TOTAL PAID PRINCIPLE AND INTEREST     1058.3087
 PRESS  1 RETURN  FOR MORE OUTPUT
 1
  MONTHLY AMORTIZATION SCHEDULE FOR A $1000.0000 LOAN
  AT 24.00%  COMPOUNDED  12 TIMES PER YEAR FOR 10.00 YEARS.
  PAYMENT  INTEREST   PRINCIPLE BALANCE  PAYMENTS
    22.05     16.75        5.30       832.18 NUMBER  49
    22.05     16.64        5.40       826.77 NUMBER  50
    22.05     16.54        5.51       821.26 NUMBER  51
    22.05     16.43        5.62       815.64 NUMBER  52
    22.05     16.31        5.74       809.90 NUMBER  53
    22.05     16.20        5.85       804.05 NUMBER  54
    22.05     16.08        5.97       798.09 NUMBER  55
    22.05     15.96        6.09       792.00 NUMBER  56
    22.05     15.84        6.21       785.79 NUMBER  57
    22.05     15.72        6.33       779.46 NUMBER  58
    22.05     15.59        6.46       771.00 NUMBER  59
    22.05     15.46        6.59       766.41 NUMBER  60
 SUM OF INTEREST PAID   1089.2972
 SUM OF PRINCIPLE PAID   233.5886
 UNPAID PRINCIPLE        766.4114
 TOTAL PAID PRINCIPLE AND INTEREST     1322.8858
 PRESS  1 RETURN  FOR MORE OUTPUT


UNPAID PRINCIPLE        766.4114
TOTAL PAID PRINCIPLE AND INTEREST     1322.8858
PRESS  1 RETURN  FOR MORE OUTPUT
1
 MONTHLY AMORTIZATION SCHEDULE FOR A $1000.0000 LOAN
 AT 24.00%  COMPOUNDED  12 TIMES PER YEAR FOR 10.00 YEARS.
 PAYMENT  INTEREST   PRINCIPLE BALANCE  PAYMENTS
   22.05     15.33        6.72       759.69 NUMBER  61
   22.05     15.19        6.85       752.84 NUMBER  62
   22.05     15.06        6.99       745.85 NUMBER  63
   22.05     14.92        7.13       738.71 NUMBER  64
   22.05     14.77        7.27       731.44 NUMBER  65
   22.05     14.63        7.42       724.02 NUMBER  66
   22.05     14.48        7.57       716.45 NUMBER  67
   22.05     14.33        7.72       708.73 NUMBER  68
   22.05     14.17        7.87       700.86 NUMBER  69
   22.05     14.02        8.03       692.83 NUMBER  70
   22.05     13.86        8.19       684.64 NUMBER  71
   22.05     13.69        8.36       676.28 NUMBER  72
SUM OF INTEREST PAID   1263.7469
SUM OF PRINCIPLE PAID   323.7161
UNPAID PRINCIPLE        676.2839
TOTAL PAID PRINCIPLE AND INTEREST     1587.4630
PRESS  1 RETURN  FOR MORE OUTPUT

  UNPAID PRINCIPLE        676.2839
  TOTAL PAID PRINCIPLE AND INTEREST     1587.4630
  PRESS  1 RETURN  FOR MORE OUTPUT
  1
   MONTHLY AMORTIZATION SCHEDULE FOR A $1000.0000 LOAN
   AT 24.00%  COMPOUNDED  12 TIMES PER YEAR FOR 10.00 YE
   PAYMENT  INTEREST   PRINCIPLE BALANCE  PAYMENTS
     22.05     13.53        8.52       667.76 NUMBER  73
     22.05     13.36        8.69       659.07 NUMBER  74
     22.05     13.18        8.87       650.20 NUMBER  75
     22.05     13.00        9.04       641.16 NUMBER  76
     22.05     12.82        9.22       631.93 NUMBER  77
     22.05     12.64        9.41       622.52 NUMBER  78
     22.05     12.45        9.60       612.93 NUMBER  79
     22.05     12.26        9.79       603.14 NUMBER  80
     22.05     12.06        9.99       593.15 NUMBER  81
     22.05     11.86       10.19       582.97 NUMBER  82
     22.05     11.66       10.39       572.58 NUMBER  83
     22.05     11.45       10.60       561.98 NUMBER  84
  SUM OF INTEREST PAID   1414.0206
  SUM OF PRINCIPLE PAID   438.0195
  UNPAID PRINCIPLE        561.9805
  TOTAL PAID PRINCIPLE AND INTEREST     1852.0401
  PRESS  1 RETURN  FOR MORE OUTPUT


  UNPAID PRINCIPLE        561.9805
  TOTAL PAID PRINCIPLE AND INTEREST     1852.0401
  PRESS  1 RETURN  FOR MORE OUTPUT
  1
   MONTHLY AMORTIZATION SCHEDULE FOR A $1000.0000 LOAN
   AT 24.00%  COMPOUNDED  12 TIMES PER YEAR FOR 10.00 YE
   PAYMENT  INTEREST   PRINCIPLE BALANCE  PAYMENTS
     22.05     11.24       10.81       551.17 NUMBER  85
     22.05     11.02       11.02       540.15 NUMBER  86
     22.05     10.80       11.25       528.90 NUMBER  87
     22.05     10.58       11.47       517.43 NUMBER  88
     22.05     10.35       11.70       505.73 NUMBER  89
     22.05     10.11       11.93       493.80 NUMBER  90
     22.05      9.88       12.17       481.63 NUMBER  91
     22.05      9.63       12.42       469.21 NUMBER  92
     22.05      9.38       12.66       456.55 NUMBER  93
     22.05      9.13       12.92       443.63 NUMBER  94
     22.05      8.87       13.18       430.46 NUMBER  95
     22.05      8.61       13.44       417.02 NUMBER  96
  SUM OF INTEREST PAID   1533.6334
  SUM OF PRINCIPLE PAID   582.9839
  UNPAID PRINCIPLE        417.0161
  TOTAL PAID PRINCIPLE AND INTEREST     2116.6173
  PRESS  1 RETURN  FOR MORE OUTPUT
```

```
UNPAID PRINCIPLE        417.0161
TOTAL PAID PRINCIPLE AND INTEREST     2116.6173
PRESS  1 RETURN  FOR MORE OUTPUT
1
 MONTHLY AMORTIZATION SCHEDULE FOR A $1000.0000 LOAN
 AT 24.00%  COMPOUNDED  12 TIMES PER YEAR FOR 10.00 YEARS
 PAYMENT   INTEREST    PRINCIPLE BALANCE  PAYMENTS
   22.05       8.34        13.71       403.31 NUMBER  97
   22.05       8.07        13.98       389.33 NUMBER  98
   22.05       7.79        14.26       375.06 NUMBER  99
   22.05       7.50        14.55       360.52 NUMBER 100
   22.05       7.21        14.84       345.68 NUMBER 101
   22.05       6.91        15.13       330.55 NUMBER 102
   22.05       6.61        15.44       315.11 NUMBER 103
   22.05       6.30        15.75       299.36 NUMBER 104
   22.05       5.99        16.06       283.30 NUMBER 105
   22.05       5.67        16.38       266.92 NUMBER 106
   22.05       5.34        16.71       250.21 NUMBER 107
   22.05       5.00        17.04       233.17 NUMBER 108
SUM OF INTEREST PAID  1614.3606
SUM OF PRINCIPLE PAID  766.8339
UNPAID PRINCIPLE        233.1661
TOTAL PAID PRINCIPLE AND INTEREST     2381.1945
PRESS  1 RETURN  FOR MORE OUTPUT


UNPAID PRINCIPLE        233.1661
TOTAL PAID PRINCIPLE AND INTEREST     2381.1945
PRESS  1 RETURN  FOR MORE OUTPUT
1
 MONTHLY AMORTIZATION SCHEDULE FOR A $1000.0000 LOAN
 AT 24.00%  COMPOUNDED  12 TIMES PER YEAR FOR 10.00 YEARS
 PAYMENT   INTEREST    PRINCIPLE BALANCE  PAYMENTS
   22.05       4.66        17.38       215.78 NUMBER 109
   22.05       4.32        17.73       198.05 NUMBER 110
   22.05       3.96        18.09       179.96 NUMBER 111
   22.05       3.60        18.45       161.51 NUMBER 112
   22.05       3.23        18.82       142.70 NUMBER 113
   22.05       2.85        19.19       123.50 NUMBER 114
   22.05       2.47        19.58       103.92 NUMBER 115
   22.05       2.08        19.97        83.95 NUMBER 116
   22.05       1.68        20.37        63.58 NUMBER 117
   22.05       1.27        20.78        42.81 NUMBER 118
   22.05       0.86        21.19        21.62 NUMBER 119
   22.05       0.43        21.62         0.00 NUMBER 120
SUM OF INTEREST PAID  1645.7716
SUM OF PRINCIPLE PAID  1000.0000
UNPAID PRINCIPLE           0.0000
TOTAL PAID PRINCIPLE AND INTEREST     2645.7716
PRESS  1 RETURN  FOR MORE OUTPUT
```

4

The number of years to pay a spring break $1000 on 24% credit card. 030913

Find the equal monthly payments that will amortize the credit card loan of $1000 for 10 years at 24%.

Use a graphing calculator

A = 1000(.24/12)/(1-(1+.24/12)^(-12(10))) = 22.04809689

TOTAL

Years	min monthly payment	
30	20.01604414	20.01
29	20.02035223	
28	20.02581859	
27	20.03275556	
26	20.04156023	
25	20.05273782	20.05
24	20.06693165	
23	20.08496178	
22	20.10787501	
21	20.13700982	
20	20.17408147	20.17
19	20.22129407	
18	20.28148986	
17	20.35835011	
16	20.45666944	
15	20.58273647	20.58
14	20.74487245	
13	20.95421123	
12	21.22505906	

$20.01(12)(30) = $7203.60

$20.05(12)(25) = $6015.00

$20.17(12)(20) = $4840.80

$20.58(12)(15) = $3704.40

11	21.58067409	
10	22.04809689	22.05
09	22.67084829	
08	23.51312748	
07	24.67581178	
06	26.32683071	
05	28.76796583	28.77
04	32.60183555	
03	39.2328526	
02	52.87109725	
01	94.55959662	94.56

5 TOTAL

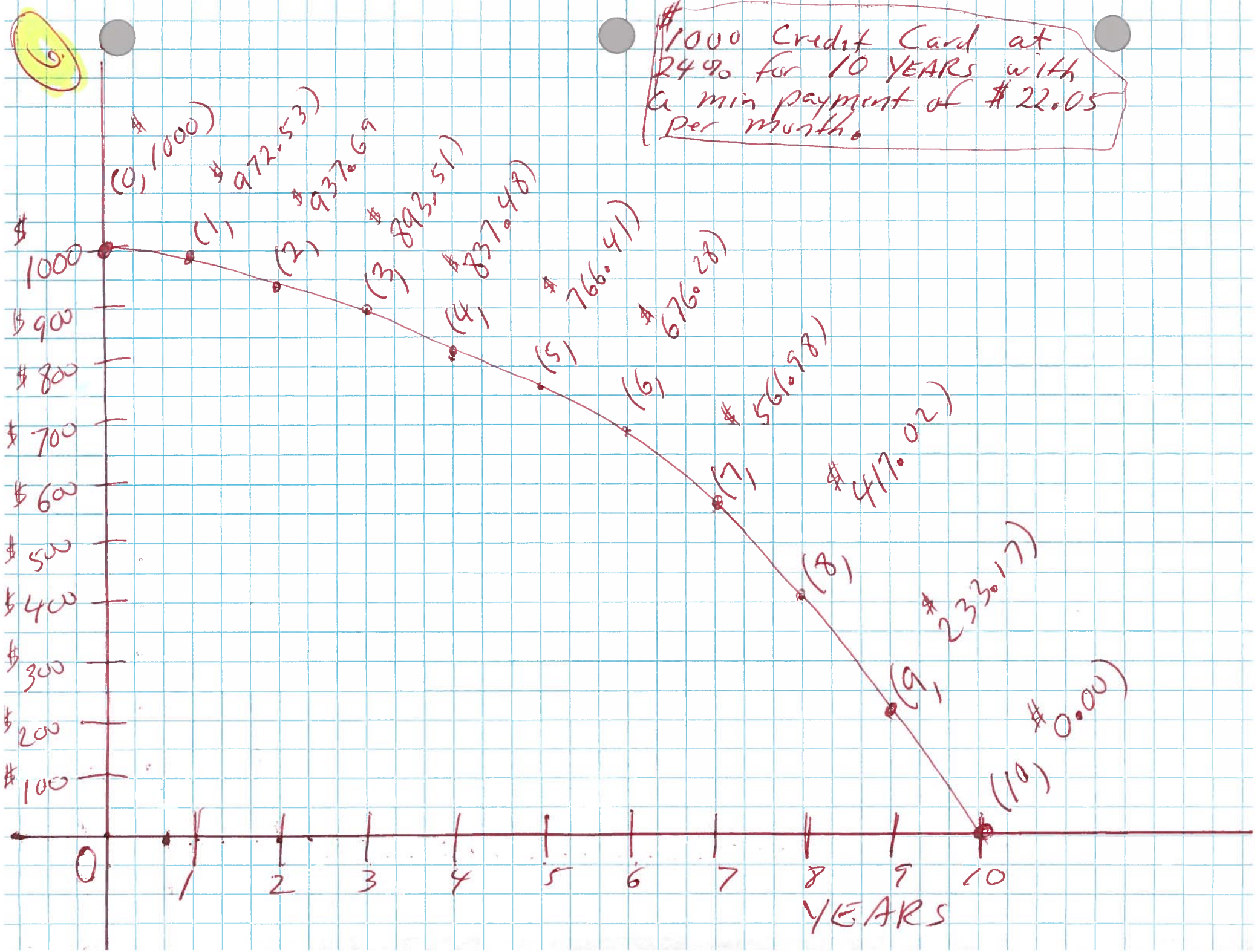
$22.05(12)(10) = \$2646.00$

$28.77(12)(5) = \$1726.20$

$94.56(12)(1) = \$1134.72$

(9)

$1000 Credit Card at 24% for 10 YEARS with a min payment of $22.05 Per Month.



WWW.ALVAREZMATHHELP.COM

We grow exponentially or really fast.

7.