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

$f(X) = \$1000(2 - e^{.0231X})$ amount owed on credit card after X years
$g(X) = 20.01(12)X$ amount paid in monthly payments
$P(X) = \$1000(1.2)^X$ payday loan

1 Solve the first order–linear Differential Equation
$Y'(t) = kY + b$ k is not 0 and b are both real numbers

2 formula If $Y'(t) = kY + b$ k is not 0 and b are both real numbers then $Y(t) = ce^{kt} - (b/k)$ always
use the formula to find Y(t) if $Y'(t) = -0.03Y + 6$ and $Y(0) = 0$

3 use the formula to find Y(t) if $Y'(t) = 0.005Y - 600$ and $Y(0) = 60000$

4 find f(0), f(1), f(2), f(3), f(5), f(10), f(15), f(18), f(20), f(25), f(30), g(0), g(4), g(30)

5 graph f(X) Xmin = 0, Xmax = 30, Ymin = -200, and Ymax = 1000

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

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

8 if f(X) = 50 then find X years to have a credit balance of $50.

9 $Y(X) = 200(1 - e^{-0.03X})$ lean muscle maker 100% fiber shakes made with real water after X weeks

X=0,1,2,3,4,5,6,7,8,12,23,26,52,78,104,156,208

10 $R(X) = (100 - 5X)(\$500 + \$50X)$ find the max per month 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, tuition at private university, find M(10)

12 P(X) = \$1000(1.2)^X payday loan, find P(2)

13 graph C(X) = \$60000(2 – $e^{0.005X}$) student loan of \$60000 with \$600 monthly payments for 138 months. (6% loan rate)

X=0,12,24,36,48,60,72,81,84,96,108,120,132,138

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

D(X) = \$600X graph X = 0 and X =138

14 graph C(X) = \$60000(2 – $e^{.001925X}$) student loan of \$60000 with \$600 monthly payments for 360 months. (12% loan rate)

X=0,1,2,3,4,5,12,24,36,48,60,120,180,210,240,300,360

Xmin = 0, Xmax = 360, Ymin = -10, Ymax = 60000

D(X) = \$600X graph X = 0 and X = 360

15 graph C(X) = \$100000 log(10 – (9/360)X) student loan of \$100000 with \$1028.61 monthly payments for 360 months. (12% loan rate)

X=0,1,2,3,4,5,12,24,36,48,60,120,180,240,274,300,360

Xmin = 0, Xmax = 360, Ymin = -10, Ymax = 371000

D(X) = \$1028.61X graph X = 0 and X = 360

16 graph D(X) = \$1028.61X amount paid in monthly payments

C(X) = \$100000 log(10 – (9/360)X) amount you owe on loan

E(X) = \$100000(-9/360)/(ln(10)(10 – (9/360)(X))) instantaneous rate of change

X=0,1,2,3,4,5,12,24,36,48,60,120,180,240,274,300,360

Xmin = 0, Xmax = 360, Ymin = -1100, Ymax = 371000

Remember credit cards are your friends and one is not seven

First order - Linear Differential Equation

Solve

DEALVAREZ

09/12/17

1. $y'(t) = ky + b$ $k \neq 0$ and b are real numbers

$$\frac{y'(t)}{ky+b} = \frac{ky+b}{ky+b}$$

$$\frac{y'(t)}{ky+b} = 1$$

$$\frac{\frac{dy}{dt}}{ky+b} = 1$$

$$\frac{1}{ky+b}\frac{dy}{dt} = 1$$

$$\frac{1}{ky+b}\frac{dy}{dt}(dt) = 1\,(dt)$$

$$\frac{1}{ky+b}\,dy = 1\,dt$$

$$\int \frac{1}{ky+b}\,dy = \int 1\,dt$$

$$\frac{1}{k}\int \frac{(k)(1)}{ky+b}\,dy = \int 1\,dt$$

$$\frac{1}{k}\int \frac{k}{ky+b}\,dy = \int 1\,dt$$

$\frac{1}{k}\ln|ky+b| + C_1 = t + C_2$

$k\left(\frac{1}{k}\right)\ln|ky+b| + kC_1 = k(t+C_2)$

$\ln|ky+b| + kC_1 = kt + kC_2$

$\ln|ky+b| + kC_1 - kC_1 = kt + kC_2 - kC_1$

$\ln|ky+b| = kt + kC_2 - kC_1$

$\ln|ky+b| = kt + k(C_2 - C_1)$

$\ln|ky+b| = kt + kC_3$ let $C_3 = C_2 - C_1$

$e^{\ln|ky+b|} = e^{kt+kC_3}$

$ky+b = e^{kt} \cdot e^{kC_3}$ let $C_4 = e^{kC_3}$

$ky+b = e^{kt} \cdot C_4$

$ky+b = C_4 e^{kt}$

$ky+b-b = C_4 e^{kt} - b$

$ky = C_4 e^{kt} - b$

$\frac{ky}{k} = \frac{C_4 e^{kt}}{k} - \frac{b}{k}$

$y = \frac{C_4}{k} e^{kt} - \frac{b}{k}$

$$y = Ce^{kt} - \frac{b}{k}$$

$$y(t) = Ce^{kt} - \frac{b}{k}$$

OR

$$C = \frac{C_4}{k}$$

Check

$$y(t) = Ce^{kt} - \frac{b}{k}$$

$$y'(t) = Ce^{kt}(k) - 0$$

$$y'(t) = Ce^{kt}(k)$$

$$y'(t) = Cke^{kt}$$

Substitute

Original

$$y'(t) = ky(t) + b$$

$$Cke^{kt} = k\left(Ce^{kt} - \frac{b}{k}\right) + b$$

$$Cke^{kt} = kCe^{kt} - k\left(\frac{b}{k}\right) + b$$

$$Cke^{kt} = kCe^{kt} - b + b$$

$$Cke^{kt} = kCe^{kt}$$

$$Cke^{kt} = Cke^{kt}$$

(2.) formula

If $y'(t) = ky + b$ $\quad k \neq 0$ and b are real numbers

then $y(t) = Ce^{kt} - \frac{b}{k}$

SOLVE

$y'(t) = -0.03y + 6$ and $y(0) = 0$

$y(t) = Ce^{kt} - \frac{b}{k}$

$y(t) = Ce^{-0.03t} - \frac{6}{-0.03}$

$y(t) = Ce^{-0.03t} + 200$

$y(0) = Ce^{-0.03(0)} + 200 = 0$

$Ce^{0} + 200 = 0$

$C(1) + 200 = 0$

$C + 200 = 0$

$C + 200 - 200 = 0 - 200$

$C = -200$

$y(t) = -200e^{-0.03t} + 200$

$y(t) = 200(-e^{-0.03t} + 1)$

$y(t) = 200(1 - e^{-0.03t})$

Ck

If $y(t) = -200e^{-0.03t} + 200$

then $y'(t) = -0.03y + 6$

$y(t) = -200e^{-0.03t} + 200$

$y'(t) = -200(-0.03)e^{-0.03t} + 0$

$y'(t) = 6e^{-0.03t}$

Subst $y'(t) = -0.03y + 6$

$6e^{-0.03t} = -0.03(-200e^{-0.03t} + 200) + 6$

$6e^{-0.03t} = 6e^{-0.03t} - 6 + 6$

$6e^{-0.03t} = 6e^{-0.03t}$ ✓

3. formula

If $y'(t) = ky + b$ $k \neq 0$ and b are real numbers,

then $y(t) = Ce^{kt} - \frac{b}{k}$

SOLVE

$$y'(t) = 0.005y - 600 \text{ and } y(0) = 60{,}000$$

$$y(t) = Ce^{kt} - \frac{b}{k}$$

$$y(t) = Ce^{0.005t} + \frac{600}{0.005}$$

$$y(t) = Ce^{0.005t} + 120{,}000$$

$$y(0) = Ce^{0.005(0)} + 120000 = 60000$$

$$Ce^0 + 120000 = 60000$$

$$C(1) + 120000 = 60000$$

$$C + 120000 = 60000$$

$$C + 120000 - 120000 = 60000 - 120000$$

$$C = -60000$$

$$y(t) = -60000e^{0.005t} + 120000$$

$$y(t) = 120000 - 60000e^{0.005t}$$

$$y(t) = 60{,}000(2 - 1e^{0.005t})$$

$$\boxed{y(t) = 60{,}000(2 - e^{0.005t})}$$

If $y(t) = -60000e^{0.005t} + 120000$

then $y'(t) = 0.005y - 600$

$y(t) = -60000e^{0.005t} + 120000$

$y'(t) = -60000(0.005)e^{0.005t} + 0$

$y'(t) = -300e^{0.005t}$

Subst

$y'(t) = 0.005y - 600$

$-300e^{0.005t} = 0.005(-60000e^{0.005t} + 120000) - 600$

$-300e^{0.005t} = -300e^{0.005t} + 600 - 600$

$-300e^{0.005t} = -300e^{0.005t}$ ✓

4. $f(x) = 1000(2 - e^{.0231x})$

$f(0) = 1000(2 - e^{(.0231(0))})$

$f(0) = \$1000$

amount you owe after 0 years

$f(1) = 1000(2 - e^{(.0231(0))})$

$f(1) = \$976.6311287$

amount you owe after 1 year

$f(2) = 1000(2 - e^{(.0231(2))})$

$f(2) = \$952.7161532$

amount you owe after 2 years

$f(3) = 1000(2 - e^{(.0231(3))})$

$f(3) = \$928.2423118$

amount you owe after 3 years

$f(4) = 1000(2 - e^{(.0231(4))})$

$f(4) = \$903.1965443$

amount you owe after 4 years

4

$$f(x) = 1000\left(2 - e^{.0231x}\right)$$

$f(5) = 1000\left(2 - e^{(.0231(5))}\right)$

$f(5) = \$877.5654855$ amount you owe after 5 years

$f(10) = 1000\left(2 - e^{(.0231(10))}\right)$

$f(10) = \$740.1407606$ amount you owe after 10 years

$f(15) = 1000\left(2 - e^{(.0231(15))}\right)$

$f(15) = \$585.8905062$ amount you owe after 15 years

$f(18) = 1000\left(2 - e^{(.0231(18))}\right)$

HALF Way Done

$f(18) = \$484.417278$ amount you owe after 18 years

$f(20) = 1000\left(2 - e^{(.0231(20))}\right)$

$f(20) = \$412.075-4696\,8$ amount you owe after 20 years

$f(25) = 1000\left(2 - e^{(.0231(25))}\right)$

$f(25) = \$218.4210886$

amount you owe after 25 years

$f(x) = 1000(2 - e^{.0231x})$

$f(30) = 1000(2 - e^{(.0231(30))})$

$f(30) = \$.2943394588$

amount you owe after 30 years

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

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

$g(0) = 240.12(0)$

$g(0) = \$0$

amount paid to credit card after 0 years,

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

$g(4) = 240.12(4)$

$g(4) = \$960.48$

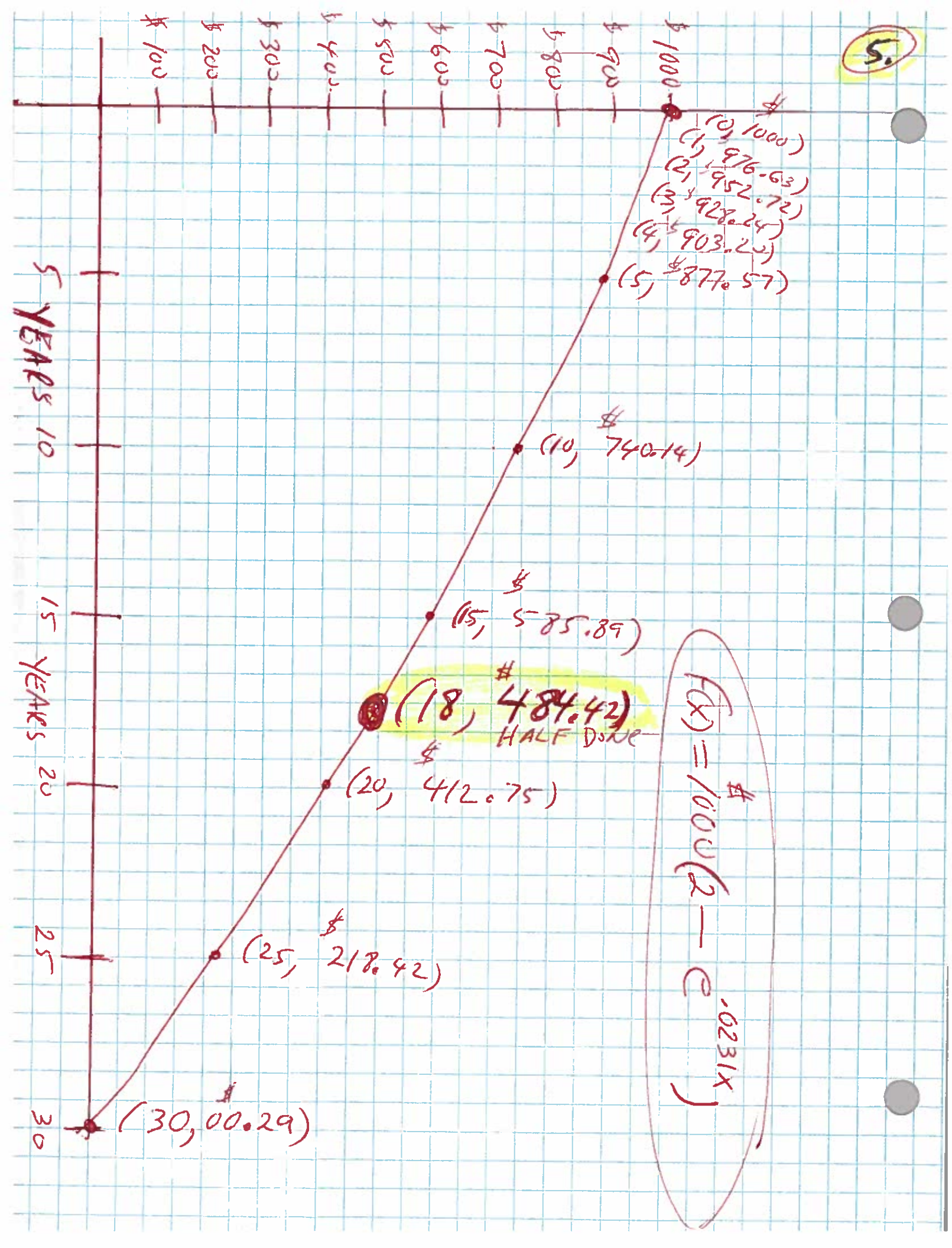
amount paid to credit card after 4 years.

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

$g(30) = 240.12(30)$

$g(30) = \$7203.60$

amount paid to credit card after 30 years


5.
$1000
$900
$800
$700
$600
$500
$400
$300
$200
$100
YEARS
5
10
15
20
25
30
(0, $1000)
(1, $976.63)
(2, $952.72)
(3, $928.24)
(4, $903.22)
(5, $877.57)
(10, $740.14)
(15, $585.89)
(18, $484.42)
HALF DONE
(20, $412.75)
(25, $218.42)
(30, $00.29)
$F(x) = 1000(2 - e^{-.0231x})$

6.

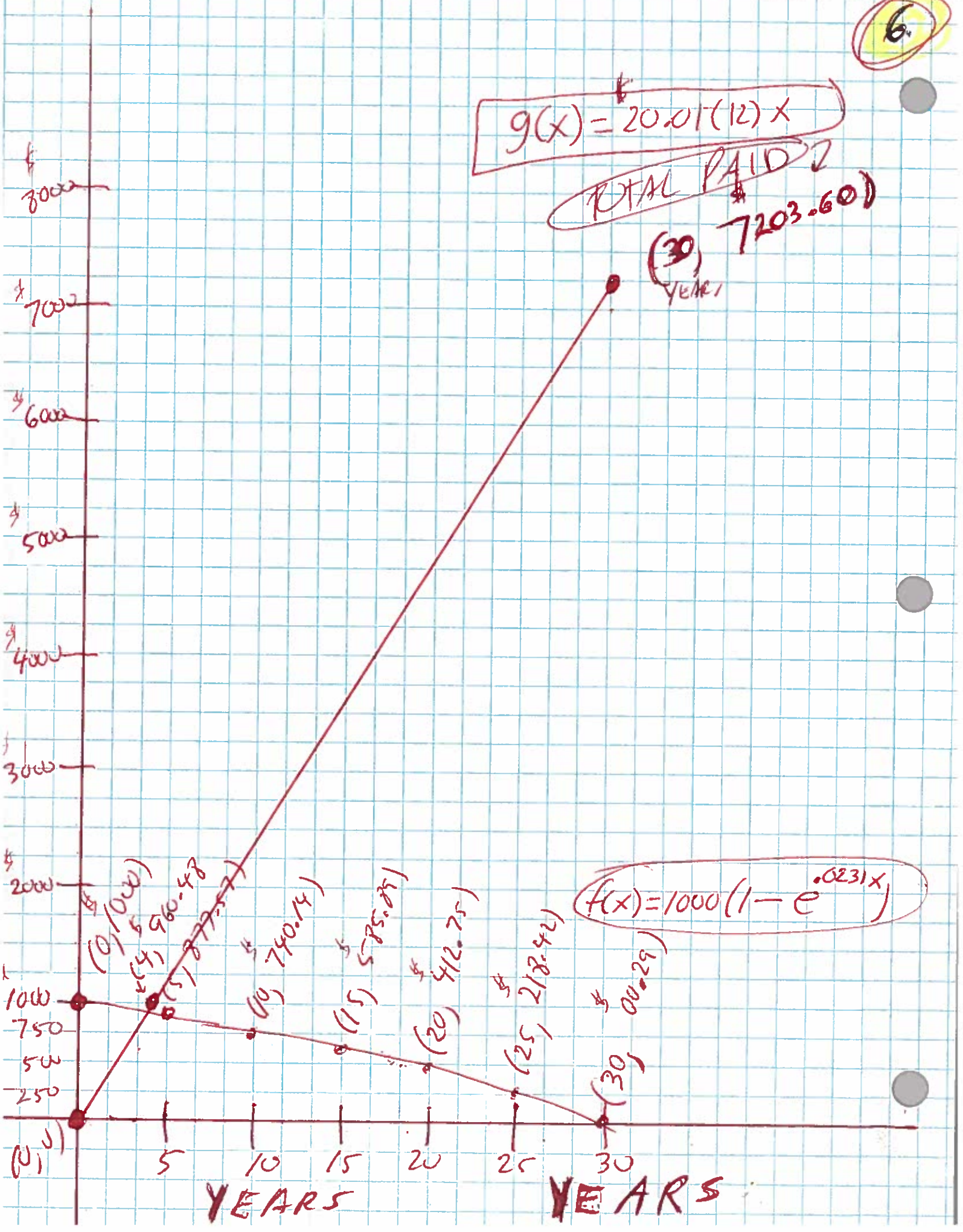
$g(x) = 20.01(12)^x$

TOTAL PAID?

$7203.60

(30) YEARS

$f(x) = 1000(1 - e^{.0231x})$



7. $f(x) = 1000(2 - e^{.0231x})$

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

$(1000(2 - e^{(.0231(0))})) - (1000(2 - e^{(.0231(4))})) =$

$(1000) - (903.1965443) =$

$1000 - 903.1965443 =$

$\# 96.80345557 =$

amount you paid on the credit card after 4 years.

8.

$$f(x) = 1000\left(2 - e^{.0231x}\right)$$

If $f(x) = 50$ then find x.

$$1000\left(2 - e^{.0231x}\right) = 50$$

$$\frac{1000\left(2 - e^{.0231x}\right)}{1000} = \frac{50}{1000}$$

$$2 - e^{.0231x} = .05$$

$$x - e^{.0231x} + 2 = .05 - 2$$

$$-e^{.0231x} = -1.95$$

$$\frac{-e^{.0231x}}{-1} = \frac{-1.95}{-1}$$

$$e^{.0231x} = 1.95$$

$$\ln\left(e^{.0231x}\right) = \ln(1.95)$$

$$.0231x \ln(e) = \ln(1.95)$$

$$.0231x\,(1) = \ln(1.95)$$

$$.0231x = \ln(1.95)$$

$$\frac{.0231x}{.0231} = \frac{\ln(1.95)}{.0231}$$

$$x = 28.9103624\text{s} \text{ YEARS}$$

YEARS of payments to have a balance of $50.

9. $y(x) = 200(1 - e^{-0.03x})$

$y(0) = 200(1 - e^{1(-0.03(0))})$

$y(0) = 0$

$y(1) = 200(1 - e^{1(-0.03(1))})$

$y(1) = 5.910893229$

$y(2) = 200(1 - e^{1(-0.03(2))})$

$y(2) = 11.64709328$

$y(3) = 200(1 - e^{1(-0.03(3))})$

$y(3) = 17.21376295$

$y(4) = 200(1 - e^{1(-0.03(4))})$

$y(4) = 22.61591266$

$y(5) = 200(1 - e^{1(-0.03(5))})$

$y(5) = 27.85840471$

#9

$$y(x) = 200\left(1 - e^{-0.03x}\right)$$

$y(6) = 200\left(1 - e^{\wedge}(-0.03(6))\right)$

$y(6) = 32.945957722$

$y(7) = 200\left(1 - e^{\wedge}(-0.03(7))\right)$

$y(7) = 37.883150811$

$y(8) = 200\left(1 - e^{\wedge}(-0.03(8))\right)$

$y(8) = 42.674422779$

$y(12) = 200\left(1 - e^{\wedge}(-0.03(12))\right)$

$y(12) = 60.464734779$

$y(23) = 200\left(1 - e^{\wedge}(-0.03(23))\right)$

$y(23) = 99.684786199$

↑ ALMOST 100 HALF DONE

$$y(x) = 200(1 - e^{-0.03x})$$

$$y(26) = 200(1 - e^{1(-0.03(26))})$$

$$y(26) = 108.3187977$$

$$y(52) = 200(1 - e^{1(-0.03(52))})$$

$$y(52) = 157.9727858$$

$$y(78) = 200(1 - e^{1(-0.03(78))})$$

$$y(78) = 180.7344724$$

$$y(104) = 200(1 - e^{1(-0.03(104))})$$

$$y(104) = 191.1685663$$

$$y(156) = 200(1 - e^{1(-0.03(156))})$$

$$y(156) = 198.1491972$$

$$y(208) = 200(1 - e^{1(-0.03(208))})$$

$$y(208) = 199.6100289$$

10 Find Max (use Vertex)

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

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

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

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

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

To find the max find the vertex

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

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

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

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

$\text{Vertex} = (5, -250(5)^2 + 2500(5) + 5000)$

$\text{Vertex} = (5, -250(5)(5) + 2500(5) + 5000)$

$\text{Vertex} = (5, -250(25) + 2500(5) + 5000)$

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

Find the MAX use (Calculus)

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

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

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

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

$R'(x) = -250(2x) + 2500(1) + 0$

$R'(x) = -500x + 2500$

Let $R'(x) = -500x + 2500 = 0$

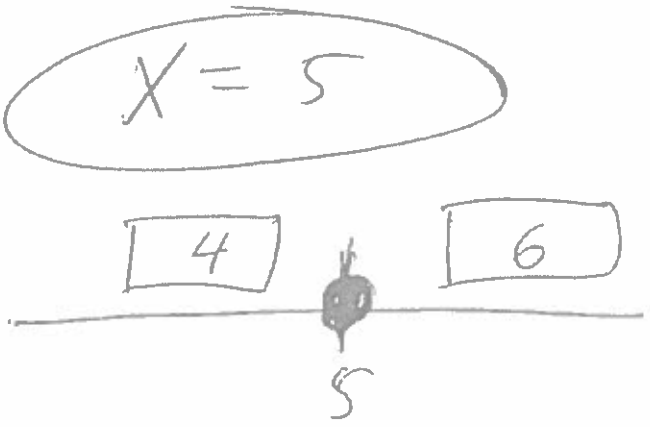
$-500x + 2500 = 0$

$-500x + 2500 - 2500 = 0 - 2500$

$-500x = -2500$

$\frac{-500x}{-500} = \frac{-2500}{-500}$

$x = 5$



$R'(x) = -500x + 2500$

$R'(4) = -500(4) + 2500$

$R'(4) = -2000 + 2500$

$R'(4) = 500$ > 0 so $R(x)$ is increasing

$R'(6) = -500(6) + 2500$

$R'(6) = -3000 + 2500$

$R'(6) = -500$ < 0 so $R(x)$ is decreasing

$R(x)$ has a max at $x = 5$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MAX Profit

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

$$R(6) = (100 - 5(6))(500 + 50(6))$$
$$R(6) = (100 - 30)(500 + 300)$$
$$R(6) = (70)(800)$$
$$R(6) = \$56{,}000$$

$$R(7) = (100 - 5(7))(500 + 50(7))$$
$$R(7) = (100 - 35)(500 + 350)$$
$$R(7) = (65)(850)$$
$$R(7) = \$55{,}250$$

$$R(8) = (100 - 5(8))(500 + 50(8))$$
$$R(8) = (100 - 40)(500 + 400)$$
$$R(8) = (60)(900)$$
$$R(8) = \$54{,}000$$

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

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

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

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

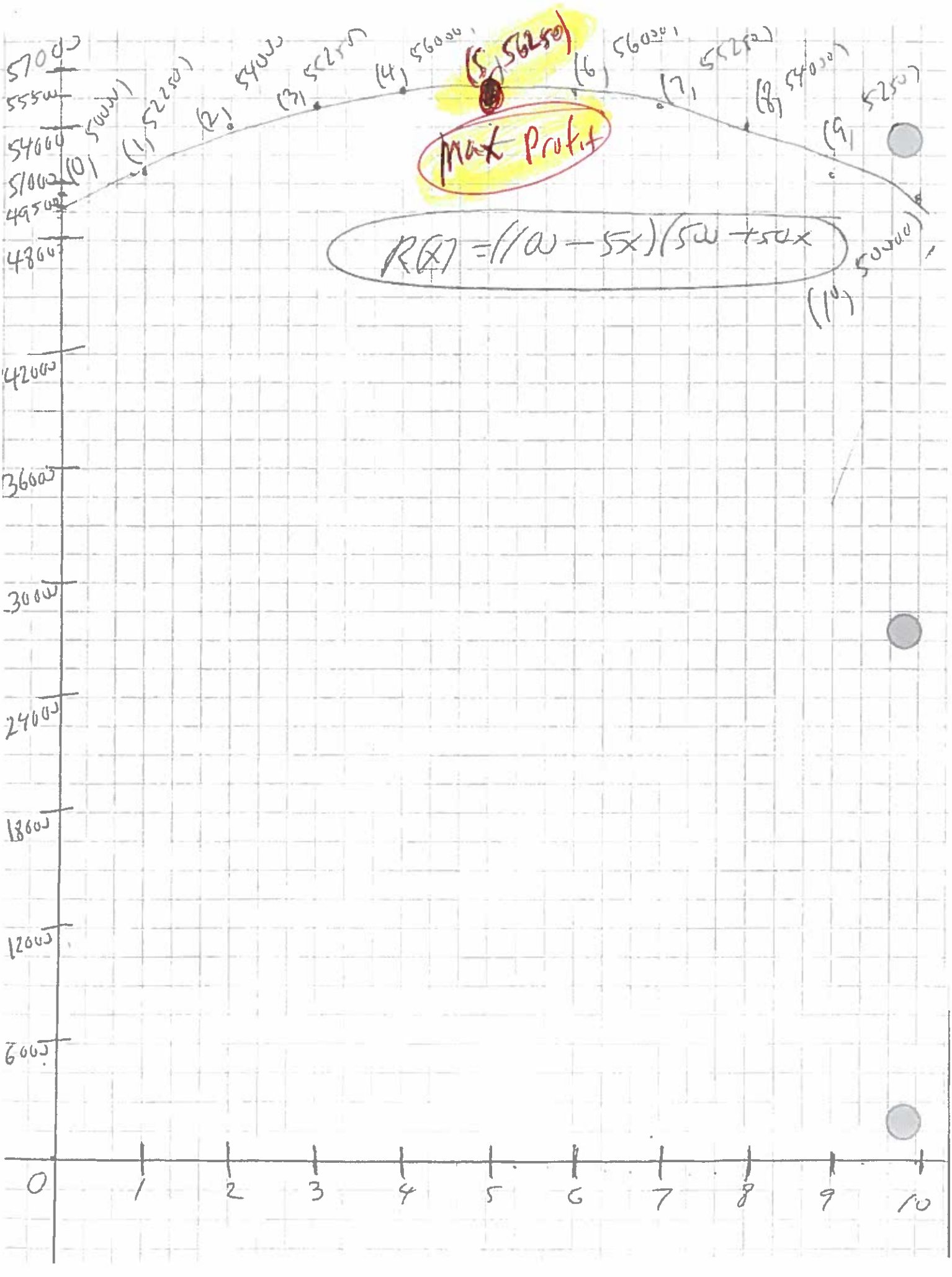
$$R(9) = \$52{,}250$$

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

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

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

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


5700
5550
5400
5100
4950
4800
4200
3600
3000
2400
1800
1200
600
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 Profit
R(x) = (10 − 5x)(500 + 50x)

(11) $M(x) = 2000x + 4000$ Find $M(10)$

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

$M(10) = \$20{,}000 + \$4{,}000$

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

Tuition for 10 hours at a Private University

(12) $P(x) = \$1000(1.2)^x$ find $P(2)$

$P(2) = \$1000(1.2)^2$

$P(2) = \$1000(1.2)(1.2)$

$P(2) = \$1000(1.44)$

$P(2) = \$1,440.00$

Amount you owe on a payday loan after **two** pay periods.

13. $C(x) = \$60{,}000\,(2 - e^{0.005x})$

STUDENT LOAN 11.5 YEAR PLAN

$C(0) = \$60{,}000\,(2 - e^{1(0.005(0))})$

$C(0) = \$60{,}000$ amount you owe after 0 months,

11.5 YEAR PLAN

$C(12) = \$60{,}000\,(2 - e^{1(0.005(12))})$

$C(12) = \$56{,}289.81$ amount you owe after 12 months,

$C(24) = 60000\,(2 - e^{1(0.005(24))})$

$C(24) = \$52{,}350.19$ amount you owe after 24 months,

$C(36) = \$60{,}000\,(2 - e^{1(0.005(36))})$

$C(36) = \$48{,}166.96$ amount you owe after 36 months,

$C(48) = \$60{,}000\,(2 - e^{1(0.005(48))})$

$C(48) = \$43{,}725.05$ amount you owe after 48 months,

$C(60) = \$60{,}000\,(2 - e^{1(0.005(60))})$

$C(60) = \$39{,}008.47$ amount you owe after 60 months

13

$C(x) = 60000(2 - e^{0.005x})$

$C(72) = 60000(2 - e^{1(0.005(72))})$

$C(72) = 34,000.24$

$C(81) = \$60,000(2 - e^{1(0.005(81))})$

$C(81) = \$30041.85$ Half Way DONE

$C(84) = \$60000(2 - e^{1(0.005(84))})$

$C(84) = \$28,682.31$

$C(96) = \$60000(2 - e^{1(0.005(96))})$

$C(96) = \$23,035.54$

$C(108) = \$60000(2 - e^{1(0.005(108))})$

$C(108) = \$17,039.59$

$C(120) = \$60000(2 - e^{1(0.005(120))})$

$C(120) = \$10,672.87$

$$C(x) = \$60{,}000(2 - e^{0.005x})$$

$$C(132) = \$60{,}000(2 - e^{1(0.005(132))})$$

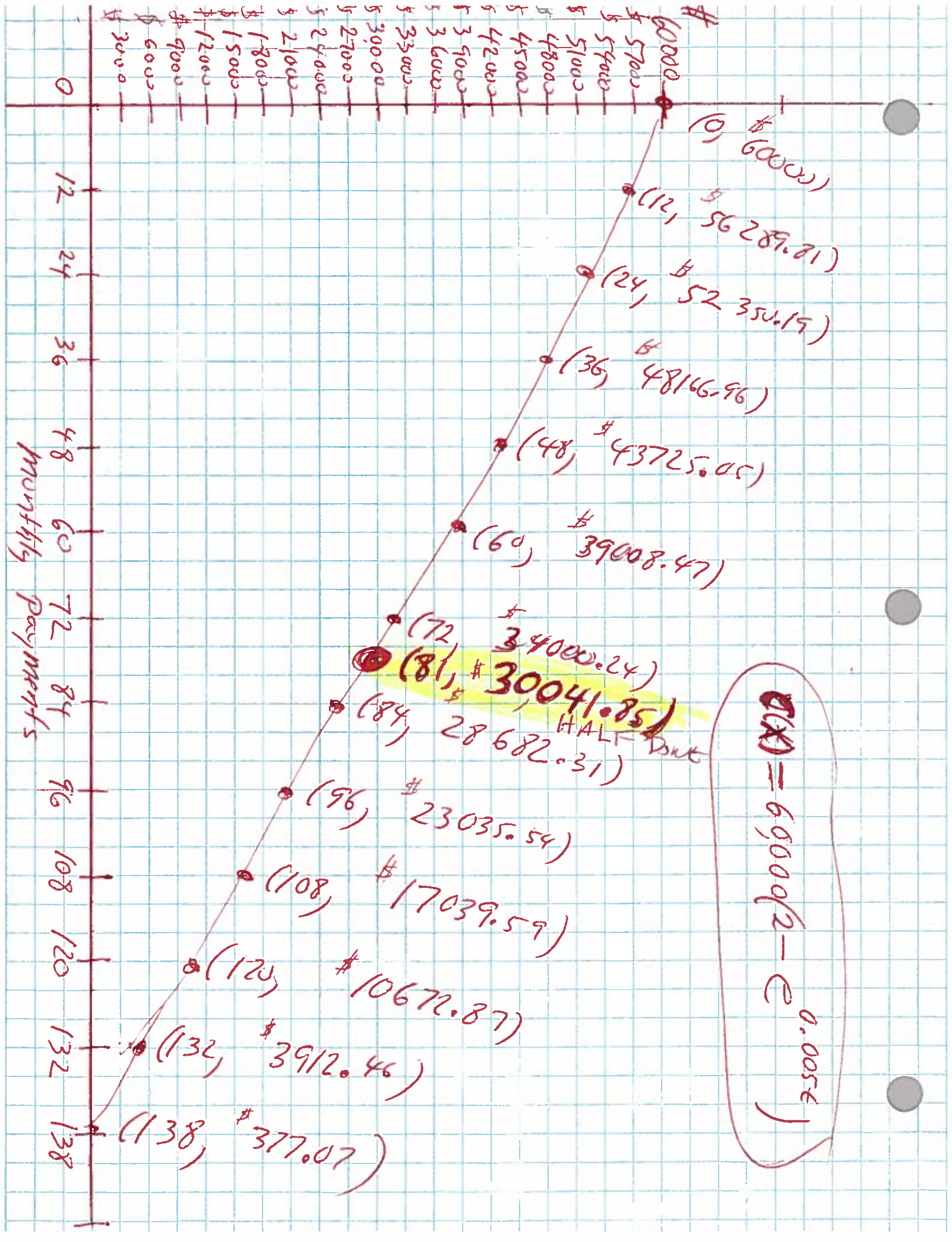
$C(132) = \$3{,}912.46$

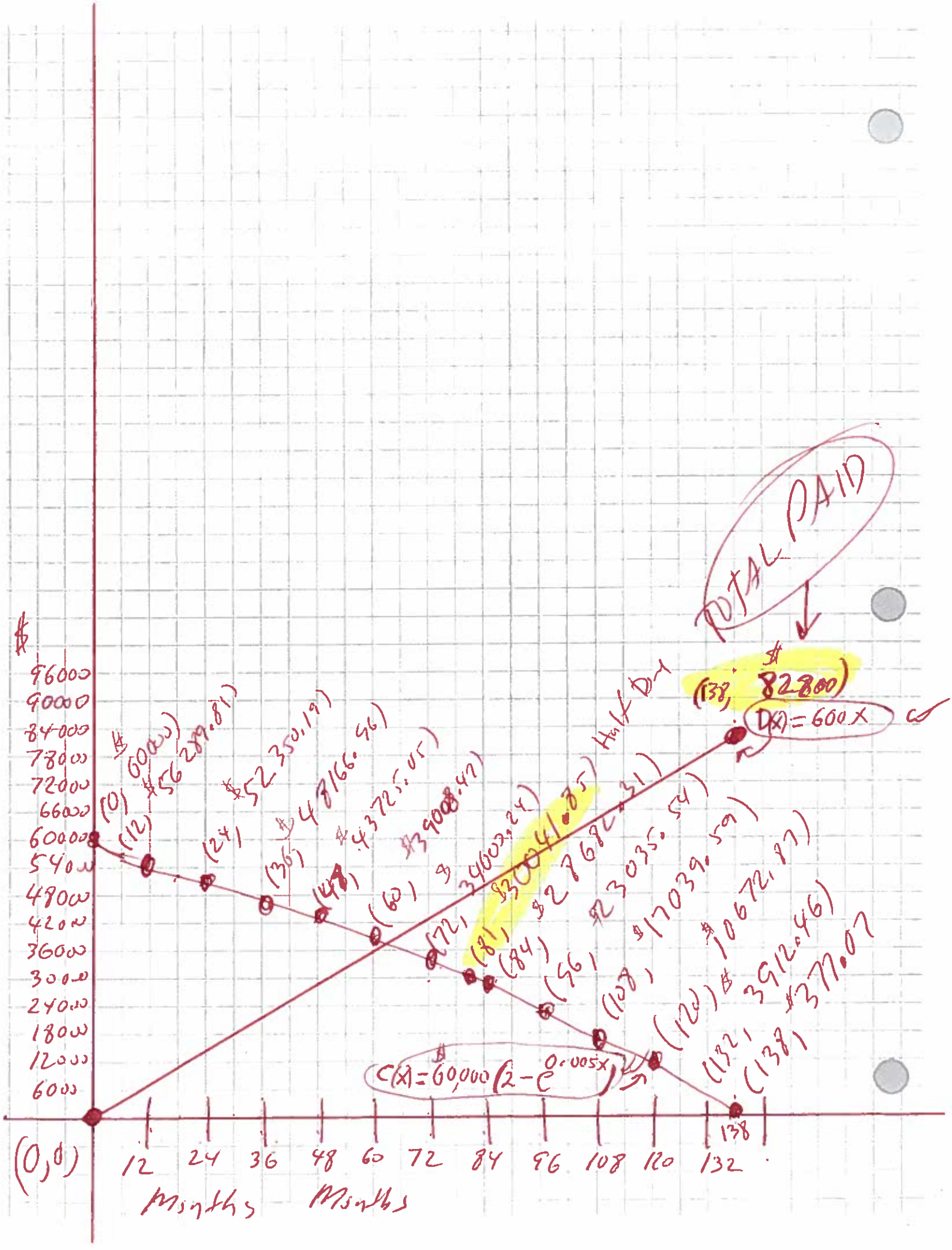
amount you owe after 132 months

$$C(138) = \$60{,}000(2 - e^{1(0.005(138))})$$

$C(138) = \$377.07$

amount you owe after 138 months


Monthly Payments
0
12
24
36
48
60
72
84
96
108
120
132
144
$60000
$57000
$54000
$51000
$48000
$45000
$42000
$39000
$36000
$33000
$30000
$27000
$24000
$21000
$18000
$15000
$12000
$9000
$6000
$3000
(0, $60000)
(12, $56289.81)
(24, $52350.19)
(36, $48166.96)
(48, $43725.05)
(60, $39008.47)
(72, $34000.24)
(81, $30041.85)
HALF Done
(84, $28682.31)
(96, $23035.54)
(108, $17039.59)
(120, $10672.87)
(132, $3912.46)
(138, $377.07)
$0 = 69000(2 − e^0.005t)


TOTAL PAID
$
(138, $82800)
D(x) = 600x
C(x) = 60,000(2 − e^{0.005x})
(0, 0)
(12, $6289.81)
(24, $12350.19)
(36, $17839.54)
(48, $23035.54)
(60, $27682.31)
(72, $32041.37)
(84, $36008.47)
(96, $39600.24)
(108, $42768.31)
(120, $45512.46)
(132, $47837.07)
(138, $49000)
$96000
90000
84000
78000
72000
66000
60000
54000
48000
42000
36000
30000
24000
18000
12000
6000
12
24
36
48
60
72
84
96
108
120
132
138
Months
Months

14 $C(x) = \$60{,}000(2 - e^{.001925x})$ Student LOAN

30 YEAR PLAN

$C(0) = \$60{,}000(2 - e^{1(.001925(0))})$

$C(0) = \$60{,}000$ amount you owe after 0 months.

30 YEAR PLAN

$C(1) = \$60{,}000(2 - e^{1(.001925(1))})$

$C(1) = \$59{,}884.38876$ amount you owe after 1 month

$C(2) = \$60{,}000(2 - e^{1(.001925(2))})$

$C(2) = \$59{,}768.55547$ amount you owe after 2 months

$C(3) = \$60{,}000(2 - e^{1(.001925(3))})$

$C(3) = \$59{,}652.49755$ amount you owe after 3 months

$C(4) = \$60{,}000(2 - e^{1(.001925(4))})$

$C(4) = \$59{,}536.21673$ amount you owe after 4 months

$C(5) = \$60{,}000(2 - e^{1(.001925(5))})$

$C(5) = \$59{,}419.71184$ amount you owe after 5 months

$C(x) = \$60{,}000\,(2 - e^{.001925x})$

$C(12) = \$60{,}000\,(2 - e^{\wedge}(.001925(12)))$

$C(12) = \$58{,}597.86772$

amount you owe after 12 months.

$C(24) = \$60{,}000\,(2 - e^{\wedge}(.001925(24)))$

$C(24) = \$57{,}162.96919$

amount you owe after 24 months.

$C(36) = \$60{,}000\,(2 - e^{\wedge}(.001925(36)))$

$C(36) = \$55{,}694.53871$

amount you owe after 36 months.

$C(48) = \$60{,}000\,(2 - e^{\wedge}(.001925(48)))$

$C(48) = \$54{,}191.79266$

amount you owe after 48 months.

$C(60) = \$60{,}000\,(2 - e^{\wedge}(.001925(60)))$

$C(60) = \$52{,}653.92913$

amount you owe after 60 months

$C(120) = \$60{,}000\,(2 - e^{\wedge}(.001925(120)))$

$C(120) = \$44{,}408.44563$

amount you owe after 120 months.

$$C(x) = 60000\left(2 - e^{.00192 \cdot x}\right)$$

14

$C(180) = \$60{,}000\left(2 - e^{1(.001925(180))}\right)$

$C(180) = \$35{,}153.43037$

$C(210) = \$60{,}000\left(2 - e^{1(.001925(210))}\right)$

$C(210) = \$30{,}109.29331$ HALF DONE

$C(240) = \$60{,}000\left(2 - e^{1(.001925(240))}\right)$

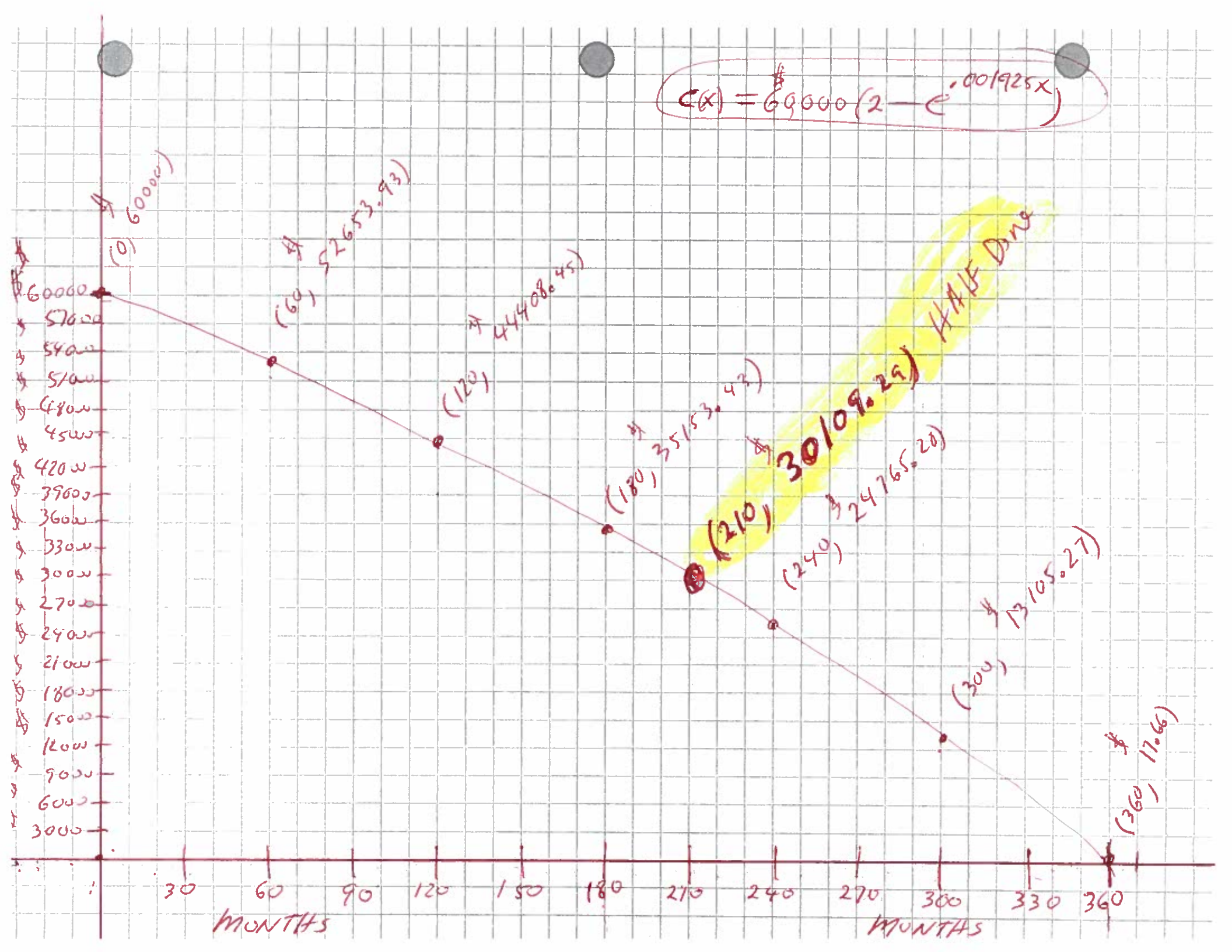
$C(240) = \$24{,}765.28181$

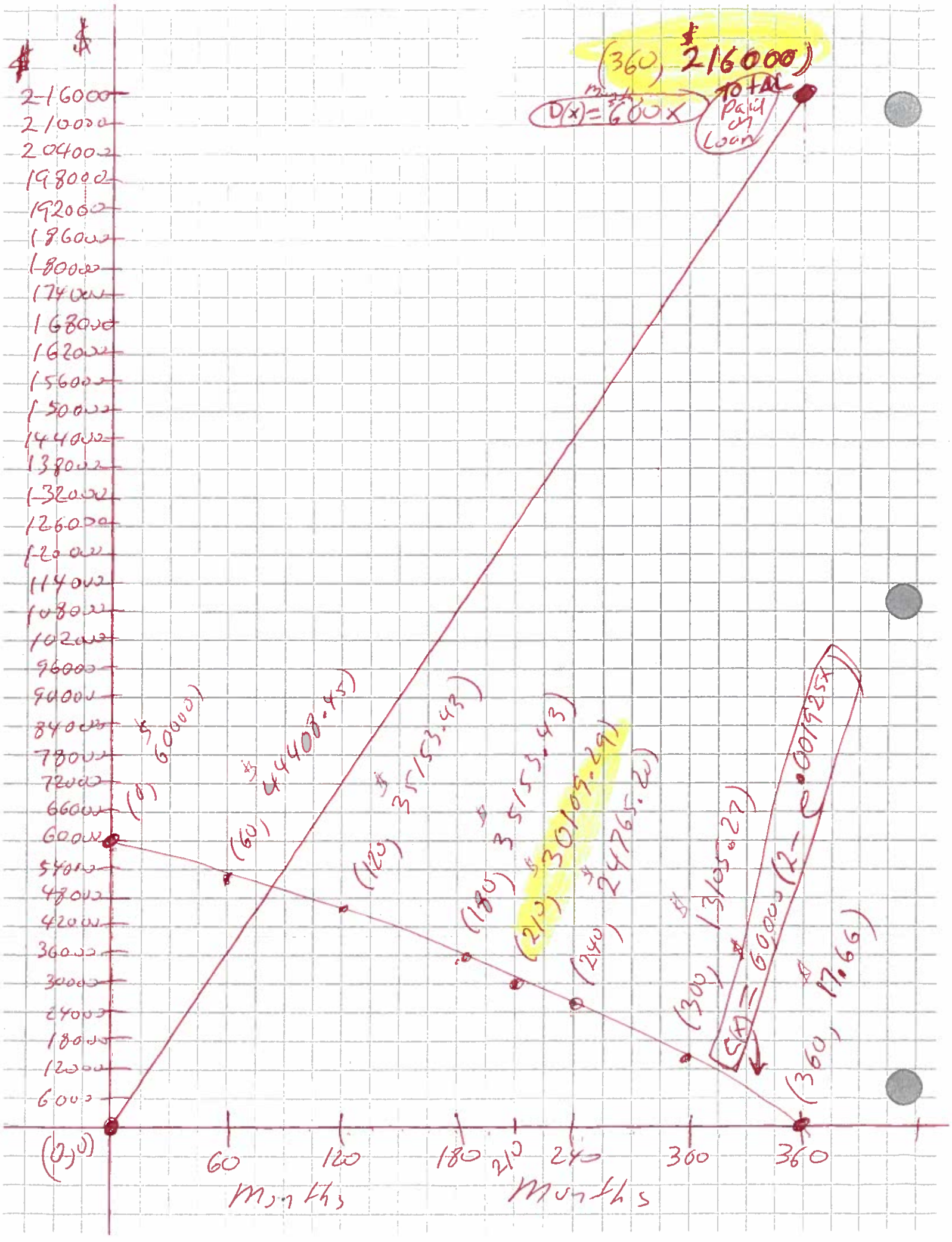
$C(300) = \$60{,}000\left(2 - e^{1(.001925(300))}\right)$

$C(300) = \$13{,}105.26532$

$C(360) = 60000\left(2 - e^{1(.001925(360))}\right)$

$C(360) = 17.66036753$


$C(x) = \$60000(2 - e^{-.001925x})$
($0, $60000)
(60, $52653.93)
(120, $44408.45)
(180, $35153.43)
(210, $30109.29) HALF DONE
(240, $24765.20)
(300, $13105.27)
(360, $17.66)
$60000
$57600
$54000
$51000
$48000
$45000
$42000
$39000
$36000
$33000
$30000
$27000
$24000
$21000
$18000
$15000
$12000
$9000
$6000
$3000
30 60 90 120 150 180 210 240 270 300 330 360
MONTHS
MONTHS


$
$
(360, $216000)
D(x) = 600x
Total Paid of Loan
(0, $60000)
(60, $44403.43)
(120, $35153.43)
(180, $30109.29)
(240, $24765.29)
(300, $13105.27)
(360, $17.66)
C(t) = 60000(2 - e^-0.00925t)
Months
Months

(15) $C(x) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)x\right)$

$C(0) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(0)\right)$

$C(0) = \$100{,}000$

$C(1) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(1)\right)$

$C(1) = \$99{,}891.29044$

$C(2) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(2)\right)$

$C(2) = \$99{,}782.30807$

$C(3) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(3)\right)$

$C(3) = \$99{,}673.05154$

$C(4) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(4)\right)$

$C(4) = \$99{,}563.51946$

$C(5) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(5)\right)$

$C(5) = \$99{,}453.71043$

$C(12) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(12)\right)$

$C(12) = \$98{,}677.17343$

$C(x) = \$100{,}000 \log(10 - (\frac{9}{360})x)$

$C(24) = \$100{,}000 \log(10 - (\frac{9}{360})(24))$

$C(24) = \$97{,}312.78536$

$C(36) = \$100{,}000 \log(10 - (\frac{9}{360})(36))$

$C(36) = \$95{,}904.13523$

$C(48) = \$100{,}000 \log(10 - (\frac{9}{360})(48))$

$C(48) = \$94{,}448.26722$

$C(60) = \$100{,}000 \log(10 - (\frac{9}{360})(60))$

$C(60) = \$92{,}941.89257$

$C(120) = \$100{,}000 \log(10 - (\frac{9}{360})(120))$

$C(120) = \$84{,}509.804$

$C(180) = \$100{,}000 \log(10 - (\frac{9}{360})(180))$

$C(180) = \$74{,}036.26895$

$C(240) = \$100{,}000 \log(10 - (\frac{9}{360})(240))$

$C(240) = \$60{,}205.99913$

$$C(x) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)x\right)$$

$$C(274) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(274)\right)$$

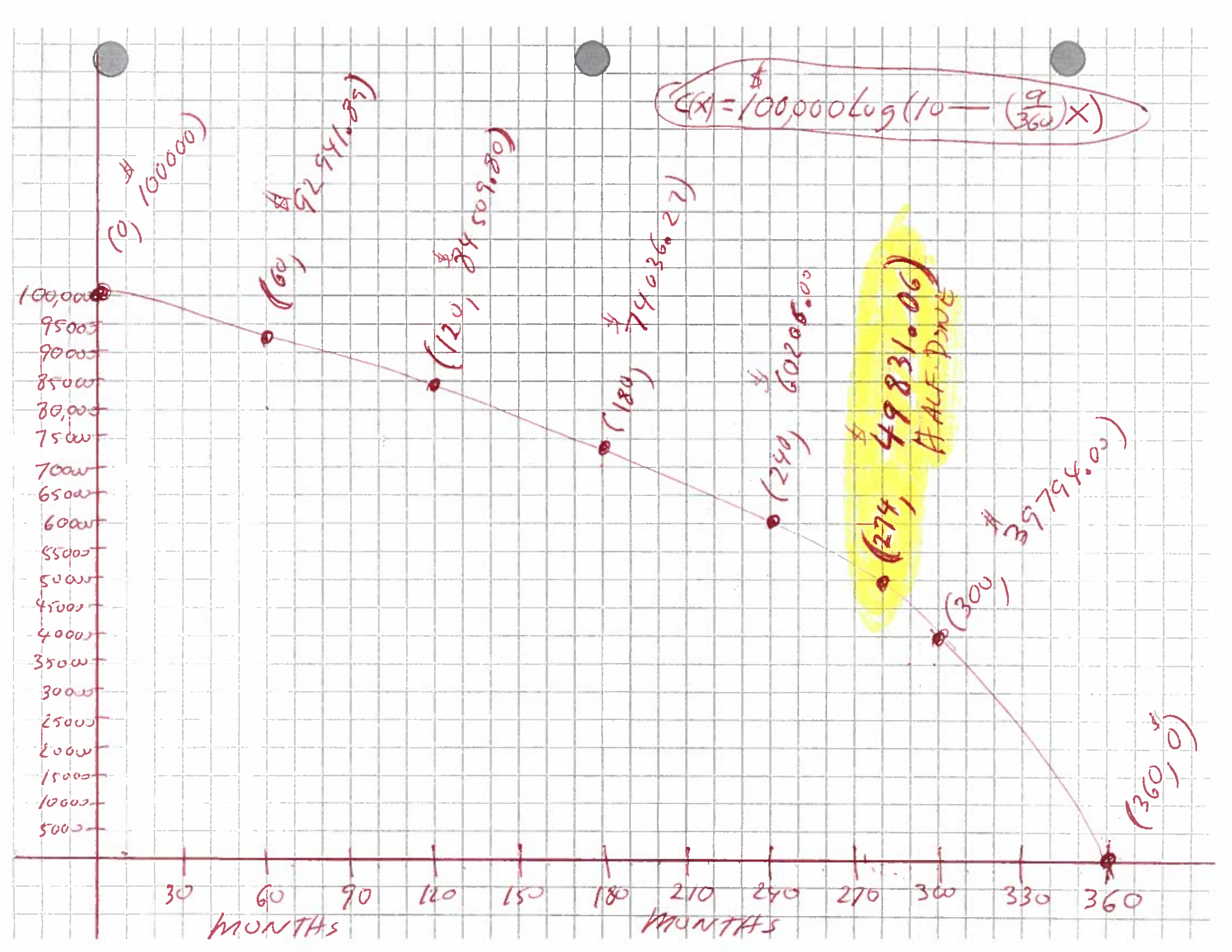
$$C(274) = \$49831.05538$$ HALFWAY DONE

$$C(300) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(300)\right)$$

$$C(300) = \$39794.00087$$

$$C(360) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(360)\right)$$

$$C(360) = \$0.00$$


$C(x) = 100{,}000 \log\left(10 - \left(\frac{9}{360}\right)x\right)$
(0, $100000)
(60, $92941.85)
(120, $84509.80)
(180, $74036.27)
(240, $60206.00)
(274, $49831.06)
(300, $39794.00)
(360, $0)
100,000
95000
90000
85000
80,000
75000
70000
65000
60000
55000
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
30
60
90
120
150
180
210
240
270
300
330
360
MONTHS
MONTHS

16. $D(x) = \$1,028.61x$

$D(0) = \$1028.61(0)$

$D(0) = \$0$

$D(1) = \$1028.61(1)$

$D(1) = \$1,028.61$

$D(2) = \$1028.61(2)$

$D(2) = \$2,057.22$

$D(3) = \$1028.61(3)$

$D(3) = \$3085.83$

$D(4) = \$1028.61(4)$

$D(4) = \$4,114.44$

$D(5) = \$1028.61(5)$

$D(5) = \$5,143.05$

$D(x) = \$1028.61x$

$D(12) = \$1,028.61(12)$

$D(12) = \$12,343.32$

$D(24) = \$1,028.61(24)$

$D(24) = \$24,686.64$

$D(36) = \$1,028.61(36)$

$D(36) = \$37,029.96$

$D(48) = \$1,028.61(48)$

$D(48) = \$49,373.28$

$D(60) = \$1,028.61(60)$

$D(60) = \$61,716.60$

$D(120) = \$1,028.61(120)$

$D(120) = \$123,433.20$

$D(180) = \$1,028.61(180)$

$D(180) = \$185,149.80$

$D(x) = \$1,028.61x$

$D(240) = \$1,028.61(240)$

$D(240) = \$246,866.40$

$D(274) = \$1,028.61(274)$

$D(274) = \$281,839.14$

$D(300) = \$1,028.61(300)$

$D(300) = \$308,583.00$

$D(360) = 1,028.61(360)$

$D(360) = \$370,299.60$

TOTAL PAID FOR LOAN

$C(x) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)x\right)$

$C(0) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(0)\right)$

$C(0) = \$100{,}000$

$C(1) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(1)\right)$

$C(1) = \$99{,}891.29044$

$C(2) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(2)\right)$

$C(2) = \$99{,}782.30807$

$C(3) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(3)\right)$

$C(3) = \$99{,}673.05154$

$C(4) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(4)\right)$

$C(4) = \$99{,}563.51946$

$C(5) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(5)\right)$

$C(5) = \$99{,}453.71043$

$C(12) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(12)\right)$

$C(12) = \$98{,}677.17343$

$C(x) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)x\right)$

$C(24) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(24)\right)$

$C(24) = \$97{,}312.78536$

$C(36) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(36)\right)$

$C(36) = \$95{,}904.13523$

$C(48) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(48)\right)$

$C(48) = \$94{,}448.26722$

$C(60) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(60)\right)$

$C(60) = \$92{,}941.89257$

$C(120) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(120)\right)$

$C(120) = \$84{,}509.804$

$C(180) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(180)\right)$

$C(180) = \$74{,}036.26895$

$C(240) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(240)\right)$

$C(240) = \$60{,}205.99913$

$$C(x) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)x\right)$$

$$C(274) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(274)\right)$$

$$C(274) = \$49831.05538$$ HALFWAY DUE

$$C(300) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(300)\right)$$

$$C(300) = \$39794.00087$$

$$C(360) = \$100{,}000 \log\left(10 - \left(\frac{9}{360}\right)(360)\right)$$

$$C(360) = \$0.00$$

$E(x) = \#100{,}000\left(\frac{-9}{360}\right)/\left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(x)\right)\right)$

$E(0) = 100{,}000\left(\frac{-9}{360}\right)/\left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(0)\right)\right)$

$E(0) = -108.5736201$

$E(1) = 100000\left(\frac{-9}{360}\right)/\left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(1)\right)\right)$

$E(1) = -108.8457348$

$E(2) = 100000\left(\frac{-9}{360}\right)/\left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(2)\right)\right)$

$E(2) = -109.1192166$

$E(3) = 100000\left(\frac{-9}{360}\right)/\left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(3)\right)\right)$

$E(3) = -109.394076$

$E(4) = 100000\left(\frac{-9}{360}\right)/\left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(4)\right)\right)$

$E(4) = -109.6703237$

$E(5) = 100000\left(\frac{-9}{360}\right)/\left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(5)\right)\right)$

$E(5) = -109.9479701$

$E(X) = \$100{,}000\left(\frac{-9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(X)\right)\right)$

$E(12) = 100000\left(\frac{-9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(12)\right)\right)$

$E(12) = -111.93156725$

$E(24) = 100000\left(\frac{-9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(24)\right)\right)$

$E(24) = -115.50385160$

$E(36) = 100000\left(\frac{-9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(36)\right)\right)$

$E(36) = -119.31167099$

$E(48) = 100000\left(\frac{-9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(48)\right)\right)$

$E(48) = -123.37911422$

$E(60) = 100000\left(\frac{-9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(60)\right)\right)$

$E(60) = -127.73362144$

$E(120) = 100000\left(\frac{-9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(120)\right)\right)$

$E(120) = -155.10517241$

$E(X) = \$100{,}000\left(-\frac{9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(X)\right)\right)$

$E(180) = \$100{,}000\left(-\frac{9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(180)\right)\right)$

$E(180) = -197.40658227$

$E(240) = \$100{,}000\left(-\frac{9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(240)\right)\right)$

$E(240) = -271.43405712$

$E(274) = \$100{,}000\left(-\frac{9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(274)\right)\right)$

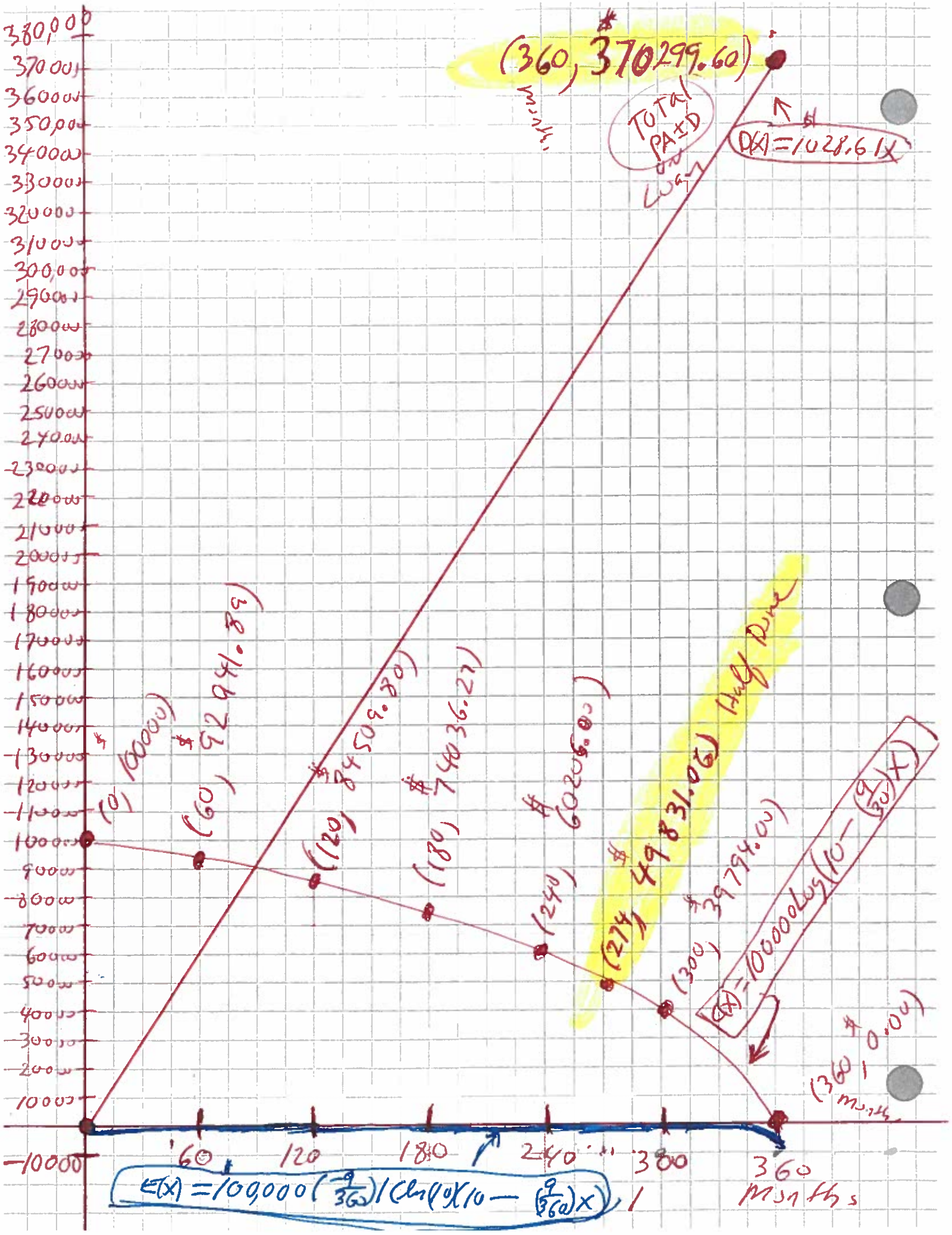
$E(274) = -344.67816021$

$E(300) = \$100{,}000\left(-\frac{9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(300)\right)\right)$

$E(300) = -434.29444819$

$E(360) = \$100{,}000\left(-\frac{9}{360}\right) / \left(\ln(10)\left(10 - \left(\frac{9}{360}\right)(360)\right)\right)$

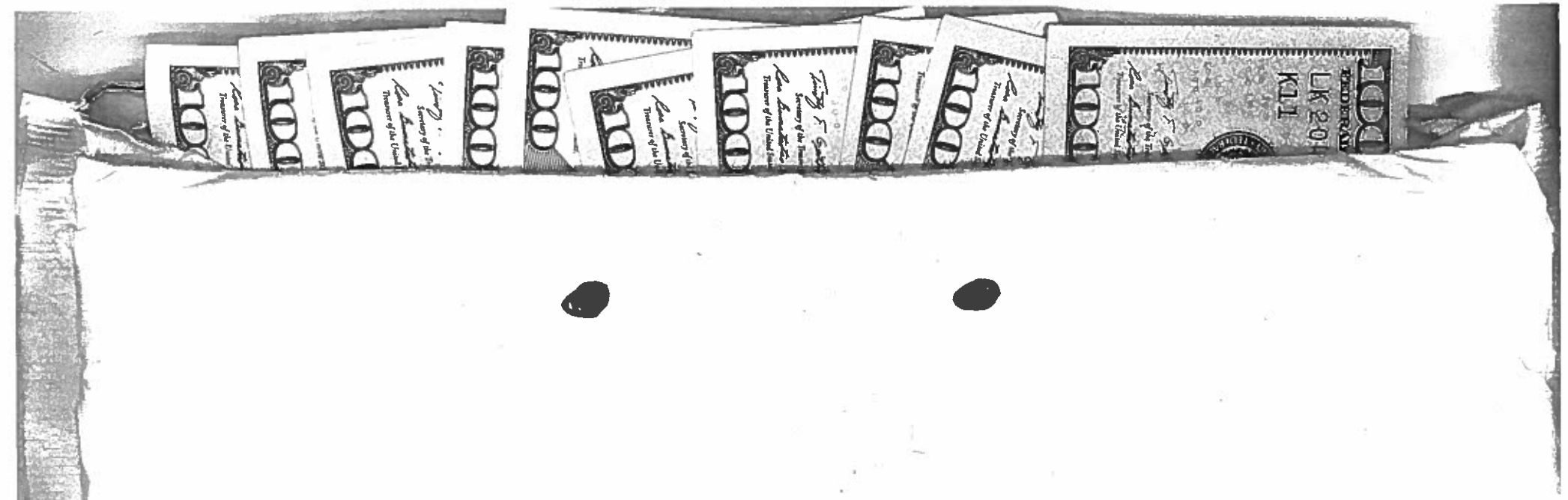
$E(360) = -1085.7362054$


(360, 370299.60)
TOTAL PAID OVER LOAN
D(x) = 1028.61x
(0, 100000)
(60, 92941.83)
(120, 84509.80)
(180, 74036.27)
(240, 60206.00)
(274, 49831.06)
(300, 39794.00)
(360, 0.00)
E(x) = 100000 − 1028.61x
E(x) = 100,000(9/360)/Cln(10x10 − (9/360)x)
60
120
180
240
300
360
months


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

1+6=7

1000



29519.00

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
Aria

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)

WWW.ALVAREZMATHHELP.COM

```
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
INPAID 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	773.00	NUMBER	59
22.05	15.46	6.59	766.41	NUMBER	60

YEAR 5

SUM OF INTEREST PAID 1089.2972
SUM OF PRINCIPLE PAID 293.5886
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

YEAR 6

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

YEAR 7

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.

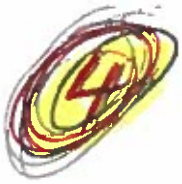
PAYMENT	INTEREST	PRINCIPLE	BALANCE	PAYMENTS	
22.05	11.24	10.81	551.17	NUMBER	85
22.05	11.02	11.02	540.15	NUMBER	86
22.05	10.80	11.25	528.90	NUMBER	87
22.05	10.58	11.47	517.43	NUMBER	88
22.05	10.35	11.70	505.73	NUMBER	89
22.05	10.11	11.93	493.80	NUMBER	90
22.05	9.88	12.17	481.63	NUMBER	91
22.05	9.63	12.42	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

YEAR 8

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
```



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

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	

TOTAL

$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
09	22.67084829
08	23.51312748
07	24.67581178
06	26.32683071
05	28.76796583
04	32.60183555
03	39.2328526
02	52.87109725
01	94.55959662

22.05

28.77

94.56

5 TOTAL

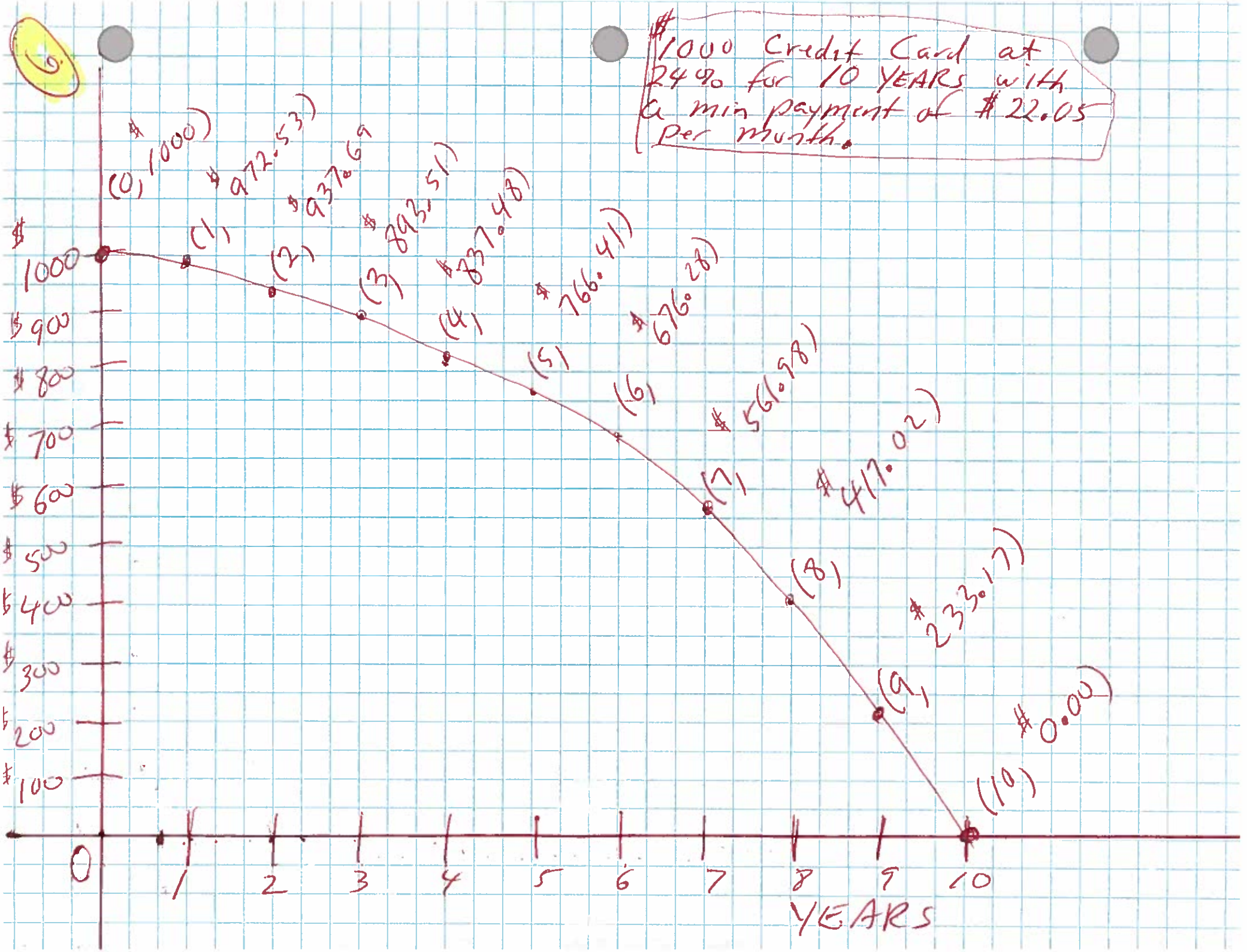
$22.05(12)(10) = $2646.00

$28.77(12)(5) = $1726.20

$94.56(12)(1) = $1134.72

6.

$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.