STUDENT'S NAME: _____

STUDENT'S NUMBER: _____

INSTRUCTOR: _____

DAWSON COLLEGE – DEPARTMENT OF MATHEMATICS
CALCULUS I (201-NYA-05/Com/IBS ! "#$o% 1&'1('15'1) *   FINAL E+AM
D! "! m, ! - 1. ' 200/ (/0&01m-120&02m*
INSTRUCTORS0 A3 4IMENE5' M3 MARCHANT' S3 MUISE

INSTRUCTIONS:

T6$! 71m 61 10 218! 3

No $%9o-m1#$o% 6! ! # $ 2-o: $; ! ;

M1<! =-! >NOW? #61# 1@@ #6! 218!   1-! $%"@=; ! ; A$#6 Bo=- ! 71m3 I9 #61# $ %o# #6! "1 ! ' %o#$9B Bo=- #! 1"6! - $m m! ; $1#! @B

Do %o# ; ! #1"6 1%B 218!   9-om #6$; o"=m! %#3 I# 6o=@; , ! -! #=-%! ; >AS IS?3

U ! >ONLY? #6!   21"! 2-o: $; ! ; 9o- ! 1"6 o%! o9 #6! ; ! #1$@! ; 1% A! - 3 I9 1; ; $#$o%1@ 21"! $ -! C=$-! ; 9o- 1% 1% A! - = ! #6! , 1"< o9 #6!   6! ! # 1%; "@! 1-@B $%; $"1#! $# "o--! 2o%; $%8 C=! #$o%

NO MARDS 1-! 8$: ! % 9o- m$ $%8 o- $m2-o2! -@B @1, ! @! ; 1% A! -

C@! 1-@B A-$#! Bo=- %1m! 1%; #=; ! %# $; $% #6!   21"! 2-o: $; ! ; 9o- #6$ 1# #6! #o2 o9 #6$ 218! 3

T6$! 71m 61 12 C=! #$o% 9o- 1 #o#1@ o9 100 m1-< 3

T6$! 71m $ Ao-#6 50E o9 Bo=- 9$%1@ 8-1; ! ' #61# $ ' 50 m1-<

GOOD LUCDF

13* T! " 6%$C=!   9o- ! : 1@=1#$%8 @m#

(G M1-< *

Calculate the value of the following limit ! Show all the wo"#

a$

23* Co%#$%=$#B
() M1-< *

/in0 all the value) $ of (whe"e the following function i 0i continuou

$$(\ )=\begin{cases} \dfrac{\&+}{\&-1} & <' \\ \% & =' \\ \&+\% & >' \end{cases}$$

9(7* $; $ "o%#$%=o= A6! % 7H -2 1%; 7 H 2
$%"! '
  $^{\&}-1=2$ HI $(\ -\&)(\ +\&)=2$ HI $=-\&$ 1%; $=\&$ (%o#! 0 -2 J & 1%; 2 J &*

9(7* $; $ "o%#$%=o= A6! % 7H&
$%"! '
$\lim\limits_{\to' 3}$ ( ) H $\lim\limits_{\to'}$ ($^{\&}+\%$) H ' $^{\&}+\%$ H %2 K (') H %

&3*

+$ 5"ite the e6uation of the tangent line to f)($ that 4a e th"ough the 4oint

53* Ho-$Lo%#1@#1%8! %# @$%!

(. M1-< *

/in0 the value of (whe"e the tangent to the following function i ho"i<ontal

$$( )=\frac{\&(}{(+')^{\cdot}}$$

$$( )=\frac{[\&(](+')^{'}-\&([(+')^{'}]}{(+')^{\cdot}} \quad * \quad \frac{\&(+')^{'}-\&(' (+')^{\&}}{(+')^{\cdot}} \quad *$$

$$\frac{\&(+')^{\&}(+' -' ()}{(+')^{\cdot}} \quad * \quad \frac{\&(' -\&()}{(+')^{1}} \quad * \ 2 \ * = \quad ' -\&(=2 \quad * = \quad =\frac{'}{\&}$$

)3* M1-8$%1@ 9=%"#$o% I% E"o%om$"

(11 M1-< *

If the 0eman0 function i given +9:

$$= \ ( )=-2!21(+: 22$$

an0 the co t function i given +9:

$$( )=\&22(+' 22222$$

a$ 5"ite the ma"ginal ave"age co t function   )& Ma"# $

$$^{>}( )=\frac{( )}{}=\frac{\&22(}{}+\frac{' 22222}{}=\&22+\frac{' 22222}{} \ the"efo"e$$

$$^{>}( )=\frac{-' 22222}{\&}$$

+$ 5"ite the ma"ginal 4"ofit function   )& Ma"# $

$$( )= ( )- ( )= ( )- ( )= (-2!21(+: 22)-(\&22(+' 22222) \ *$$

$$-2!21(^{\&}+: 22(-\&22(-' 22222=-2!21(^{\&}+. 22(-' 22222 \ the"efo"e$$

$$( )=-2!2: (+. 22$$

c$ Calculate the ma"ginal co t of 4"oOucing the %2%? t unit)& Ma"# $

( )=&22 the"efo"e

(%22)=&22

0$ 5"ite the E)4$ function); Ma"# $

$$=-2!21(+:22\quad *=\quad 2!21(=:22-\quad *=\quad =\frac{:22-}{2!21}\quad *=\quad ( )=&2222-&;4$$

$$( )=-\frac{( )}{( )}\quad *\quad -\frac{-&;4^{\&}}{&2222-&;4}\quad *\quad \frac{\&}{:22-}$$

G3* Im2@$"$# ; $99! -! %#$1#$o%
() M1-< *
Calculate the fi" t Oe"ivative of 9)that i 8 $ im4licitl98

$$\sqrt{\quad}=\ {}^{\&}+\ {}^{\&}$$

$$\left[\frac{\%}{\&}\right]\ \frac{\%}{\&}+\ \frac{\%}{\&}\left[\frac{\%}{\&}\right]=&(+[\quad]\ {}^{\&}+\ [\ {}^{\&}]$$

$$\frac{\sqrt{\quad}}{\&\sqrt{\quad}}+\frac{\sqrt{\quad}}{\&\sqrt{\quad}}=&(+\ {}^{\&}+&(99$$

$$(\frac{\sqrt{\quad}}{\&\sqrt{\quad}}-&(9)=&(+\ {}^{\&}-\frac{\sqrt{\quad}}{\&\sqrt{\quad}}\quad HI\quad =\frac{&(+\ {}^{\&}-\frac{\sqrt{\quad}}{\&\sqrt{\quad}}}{\frac{\sqrt{\quad}}{\&\sqrt{\quad}}-&(9}$$

/3* O2#mL1#$o% I
() M1-< *
/in0 the a+ olute e(t"ema of the function on the clo e0 inte"val B?%8%C

103* O2#mL1#$o% II

(. M1-< *

MINIMIEIN@ COST: /o" it +eef tew Gecdmi4anzdul EcVabinOSchareSdoS2kaaut87oa/hBINLa4%oa

containe" with a ca4acit9)volume$ of ' . cu+ic inche   ) $! /inO the "a0iu

) " $ anO height) h $ of the containe" that can +e con t"ucteO u ing the lea t

amount of metal

Fint : The volume of a c9lin0"ical containe" i given +9 $=\pi$ &   anO it   u"face

a"ea i given +9 $=\&\pi$

123* I%; ! 9$%$#! I%#! 8-1@

() M1-< *

/in0 the following integ"al

a$ $\int (\sqrt{} + \dfrac{'}{} - ' \quad)$)' Ma"# $

* $\int ^{\overline{\&}} + \dfrac{'}{} - ' \qquad = \dfrac{\&}{;} ^{\overline{\&}} + ' \ln| \quad |-' \quad +$

+$ $\int (\; + \&)(\; - \dfrac{\&}{})$)' Ma"# $

$\int ^{\&} - \dfrac{\&}{} + \&(-\&\dfrac{\&}{} \qquad * \quad \int ^{\&} - \& + \&(-\dfrac{1}{} \qquad * \quad \dfrac{'}{;} - \&(+ ^{\&} - 1\ln| \; |+$