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!- $mm!;$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&
$%"!'
$\lim_{\to' 3} ( )$ H $\lim_{\to'} ( ^{\&}+\%)$ 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

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

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

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

)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"o0ucing the %2%? t unit )& Ma"# $

( )=&22 the"efo"e

(%22)=&22

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

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

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

G3* Im2@$"$# ;$99!-!%#$1#$o%
() M1-< *
Calculate the fi" t 0e"ivative of 9 )that i 8 $ im4licitl98

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

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

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

$(\frac{\sqrt{\ }}{\&\sqrt{=}}-\&(9)=\&(+\ {}^{\&}-\frac{\sqrt{\ }}{\&\sqrt{=}}$ H I $=\frac{\&(+\ {}^{\&}-\frac{\sqrt{\ }}{\&\sqrt{=}}}{\frac{\sqrt{\ }}{\&\sqrt{=}}-\&(9}$

/3* O2#$m$L1#$o% I
() M1-< *
/in0 the a+ olute e(t"ema of the function on the clo e0 inte"val B?%8%C

1O3* O2#$m$L1#$o% II
( . M1-< *
MINIMIEIN@ COST: /o" it +eef te[illegible]
contaie" with a ca4acit9 )volume$ of ' . cu+ic inche ) $! /in0 the "a0iu
) " $ an0 height ) h $ of the contaie" that can +e con t"ucte0 u ing the lea t
amount of metal
Fint : The volume of a c9lin0"ical contaie" i given +9 $=\pi$ &$^{}$ an0 it u"face
a"ea i given +9 $=\&\pi$

123* I%; !9$%$#! I%#!8-1@
() M1-< *
/in0 the following integ"al

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

* $\int \frac{}{\&}+\frac{}{}-\ = \frac{\&}{;}\ \frac{;}{\&}+\ \ln|\ |-\ +$

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

$\int\ ^{\&}-\ \frac{\&}{}+\&(-\&\frac{\&}{}$ * $\int\ ^{\&}-\&+\&(-\frac{1}{}$ * $\frac{}{}-\&(+\ ^{\&}-1\ln|\ |+$