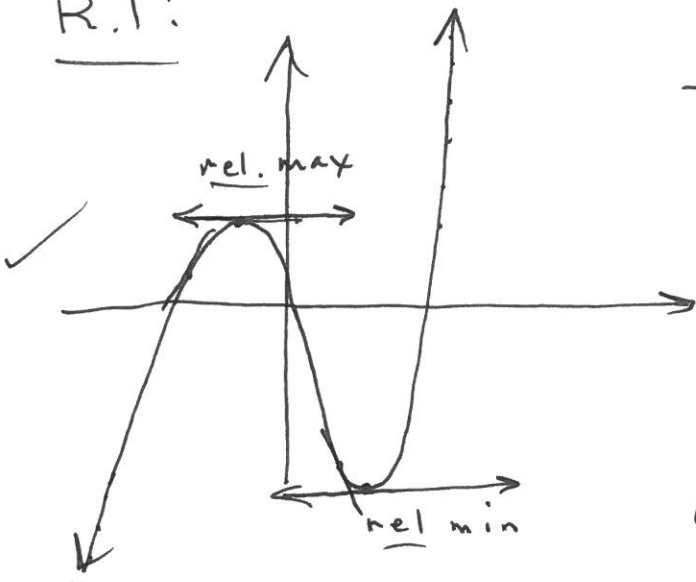
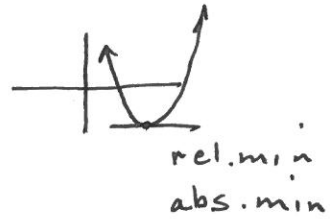


Tuesday, August 28

R.I:

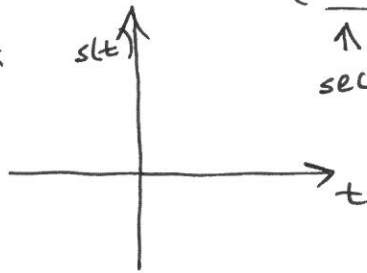
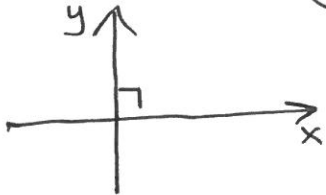


tangent line is  
HORIZONTAL ✓



OPTIMIZATION:

ordered pair:  $(x, y)$   $(x, f(x))$



$(\underline{t}, \underline{s(t)})$   $(\underline{t}, \underline{v(t)})$   
 ↑ ↑  
 sec. dist; ht; pos

linear equations:

$m = \frac{\text{rise}}{\text{run}} =$

$\frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{y_2 - y_1}{x_2 - x_1}$

pt:  $(m)$

$(x_1, y_1)$

$\underline{y - y_1} = m(\underline{x - x_1})$  ✓

(2, -3) m = -2/5

y - y1 = m(x - x1)

y - (-3) = -2/5(x - 2)

5(y + 3) = -2(x - 2)

5y + 15 = -2x + 4

2x + 5y + 11 = 0

Ax + By + C = 0

m = -A/B

solve for y:

2x + 5y + 11 = 0

y = (-2x - 11) / 5

y = (-2/5)x - 11/5 (y-int.)

y = y1

y - y1 = m(x - x1)

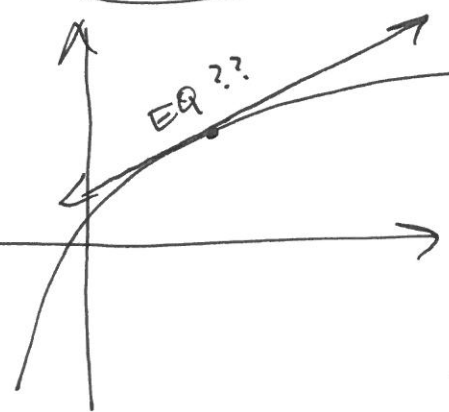
m = 0 = rise/run

HORIZ.

VERT LINE!

m = undef.

x = k



y = f(x) m = ?

find the equation of the line tangent to y = f(x) at (4, 3).

Parabolas:

$$y = x^2$$



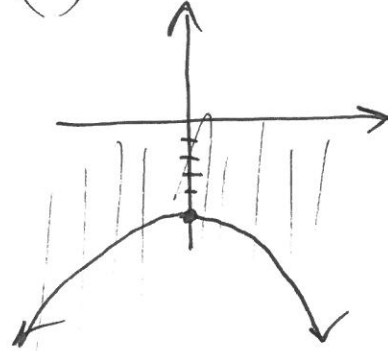
$$y = x^2 + 3$$

$$y = -x^2 + 3$$

$$y = 4x^2$$

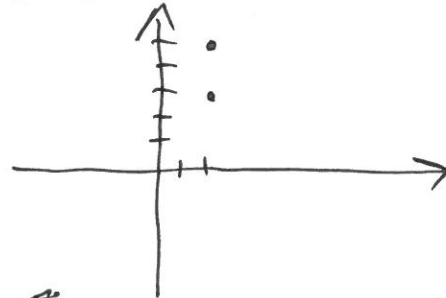
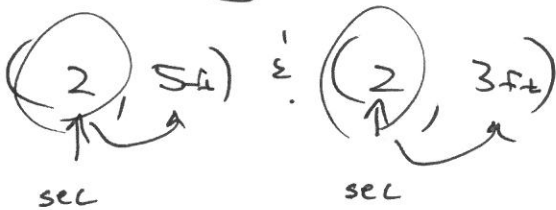


$$y = \left(\frac{-1}{2}\right)x^2 - 5$$



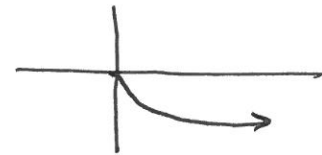
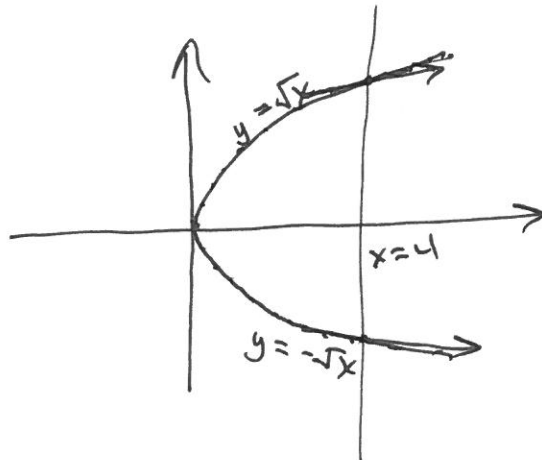
FUNCTION: ✓

- each 1<sup>st</sup> element is assigned a unique second element.



$$x = y^2$$

$$\pm \sqrt{x} = y$$



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

$\uparrow$  future value  
 $\uparrow$  initial \$  
 $\uparrow$  interest rate  
 $\uparrow$  number of periods

compound int.  
 (not contin comp.)  
 $n=1; n=4; n=12; \dots$

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

$n = 4$  (comp. prds per year)

$r = .0285$

$t = 10$  (in years)

$P = 10,000$

(10 "grand")??

$$A = 10,000 \left( 1 + \frac{.0285}{4} \right)^{(4)(10)}$$

A = \_\_\_\_\_

121-001

**Subject:** Re: setting up a Moodle page; TA office hours  
**From:** Wenlong Hu <whu7@ncsu.edu>  
**Date:** 8/23/18, 9:02 PM  
**To:** John Griggs <jrgriggs@ncsu.edu>

Dear Dr. Griggs,

I would like to hold my office hours in SAS Hall 2103 form 8:30 to 10:00 every Tuesday and Thursday.

Sincerely!  
Wenlong Hu

On Thu, Aug 23, 2018 at 2:38 PM John R Griggs <jrgriggs@ncsu.edu> wrote:  
Erik, Jai and Wenlong: (MA121-001)

Ju, Alexander and Pratik: (MA121-002)

Chuan, Courtney and Deepika: (MA121-003)

I would like for each group of TAs to get together to set up a Moodle page for your respective section. We will use this Moodle page for test grades and attendance information. Also, I would like for you to send me when and where you will hold your office hours for the class - so I can let the students in each class know when you are available to them for help. Thanks...

John Griggs

**Subject:** Re: setting up a Moodle page; TA office hours  
**From:** Jai Aslam <jkaslam@ncsu.edu>  
**Date:** 8/23/18, 5:16 PM  
**To:** John R Griggs <jrgriggs@ncsu.edu>

121-001

Hi Professor Griggs,

I'll do my office hours in my office SAS 3213 from 10-11:30 on Mondays and Wednesdays.

Best,  
Jai

On Thu, Aug 23, 2018 at 2:38 PM John R Griggs <jrgriggs@ncsu.edu> wrote:  
Erik, Jai and Wenlong: (MA121-001)

Ju, Alexander and Pratik: (MA121-002)

Chuan, Courtney and Deepika: (MA121-003)

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John Griggs

**Instructor:** John Griggs **TAs:** Erik Mainellis (ekmainel@ncsu.edu), Jai Aslam (jkaslam@ncsu.edu), Wenlong Hu (whu7@ncsu.edu) **Office:** SAS 2107 **Phone:** 513-2291

**E-mail:** jrgriggs@ncsu.edu

**Office hours:** 1:15 – 2:45 pm T Th, and by appointment

**Textbook:** Calculus and its Applications (11th ed.) by Bittinger, 2016, (\$150 new, \$90 used)

**Goals and Objectives:** Since MA121 is a course in the mathematical sciences category of the General Education Requirements, it will provide instruction and guidance that helps students to: (1) improve and refine the mathematical problem-solving abilities; and (2) develop the logical reasoning skills. Upon completion of this one-semester, terminal calculus course, students will be able to define, find, and apply the derivative and the integral as well as relate these new concepts to previously learned mathematics.

**Grading:** 60% Tests; 15% Homework/Quiz; 25% Final exam; the +/- system will be used:  
98 - 100 A+; 92-97 A; 90-91 A-; 88-89 B+; 82-87 B; 80-81 B-; 78-79 C+; 72-77 C;  
70-71 C-; 68-69 D+; 62-67 D; 60-61 D-; 0-59 F

**Absences:** No penalty for excessive absences; the reward for good attendance (3 absences or fewer) is replacing your worst test score with the final exam. (sleeping = absent) Tardies and early departures will accrue into absences (3T=1A). Students who are tardy should sit in the back row of the classroom so as not to distract the class that has already begun. It is then **your** responsibility to see the TA's at the front/back of the classroom after class to have your absence changed to a tardy. If an **excused** absence occurs on a test day, it is responsibility of the student to see the instructor as soon as possible to schedule a make-up test at a mutually agreeable time.

**Homework/Quiz:** 11 WebAssign homeworks; 4 quizzes (one of which is a one page type-written report of an interview with a person currently working in your chosen career/field. You may ask as many questions as you choose, but you **must** ask how mathematics is used in that career). This paper will be due after Fall Break (Oct 9). No late homework assignments will be accepted and **no make-up quizzes** will be given. As a result of this somewhat restrictive policy, the 3 worst grades from this group of 15 grades will be dropped. Requests for extension of webassign homework deadlines can be made using webassign – although point totals are reduced. (quizzes will be take-home; due the next class meeting)

All tests will be taken in blue books. Students should turn in 6 blue books (no names on them) to the TA's prior to test one. Blue books can be obtained at the student bookstores – many times they are free; they are at most \$.15 each. A stamped-blue book (two blue books for the exam) will be issued to you each test day. Students with **documented disabilities** (through NCSU's DSO) will be given all necessary accommodations. Instructor must have paperwork well before testing begins.

**Academic Integrity Statement:** Academic dishonesty includes the giving; taking, or presenting of information or material by a student with the intent of unethically or fraudulently aiding oneself or another person on any work which is to be considered in the determination of a grade or the completion of academic requirements. More specific definitions are set in the NCSU Code of Student Conduct. The honor pledge: "I have neither given nor received unauthorized aid on this test or assignment."

**Final Exam:** Thursday, December 13, 8:00 – 11:00 pm, SAS2203

J. Griggs' homepage (link to class notes and test solutions): <http://www4.ncsu.edu/~jrgriggs/>

**Webassign homepage:** <http://webassign.ncsu.edu>

**MA 121 - ELEMENTS OF CALCULUS**  
TEXT: Calculus, by M. L. Bittinger (11th Edition)

Fall 2018 (Tuesday/Thursday Sections)

Thursday, August 23 – Tuesday, September 11:  
Chapter R: R.1 – R.5; Chapter 1: 1.1 – 1.6; test review  
**Test #1: Thursday, September 13**

Tuesday, September 18 – Tuesday, October 9:  
Chapter 1: 1.7, 1.8; Chapter 2: 2.1 – 2.5; test review  
**Test #2: Thursday, October 11**

Tuesday, October 16 – Thursday, November 1:  
Chapter 3: 3.1 – 3.5; Chapter 4: 4.1 – 4.3; test review  
**Test #3: Tuesday, November 6**

Thursday, November 8 – Tuesday, November 27  
Chapter 4: 4.4 – 4.5; Chapter 5: 5.1 – 5.3, 5.6, 5.7; test review  
**Test #4: Thursday, November 29**

Tuesday, December 4 – Thursday, December 6  
Chapter 6: 6.1 – 6.3; final exam review  
**Comprehensive Final Exam:**  
**MA121-001: Thursday, December 13 8:00 – 11:00 am**  
**MA121-002: Thursday, December 13 1:00 – 4:00 pm**