

Tuesday, August 28

R.I:

linear equations:

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

$$\frac{y - y_1}{(x_1, y_1)} = \frac{m(x - x_1)}{m}$$

$$\frac{m}{1} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$(2, -5) \hat{=} m = -\frac{4}{3} \checkmark$$

$$y - y_1 = m(x - x_1)$$

$$y - (-5) = -\frac{4}{3}(x - 2)$$

$$3(y + 5) = \frac{-4}{3}(x - 2) \cdot 3$$

$$3y + 15 = -4x + 8$$

$$\boxed{4x + 3y + 7 = 0}$$

$$Ax + By + C = 0$$

$$4x + 3y + 7 = 0$$

$$\frac{3y}{3} = \frac{-4x - 7}{3}$$

$m = 0$?

HORIZONTAL

($m = +$)

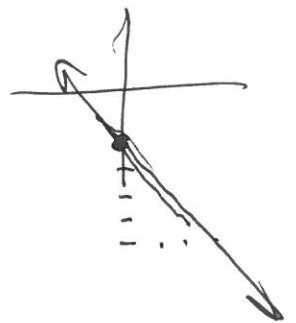
RISING (FROM
L to R)

($m = -$)

FALLING (FROM
L to R)

$m = \text{UNDEF.}$

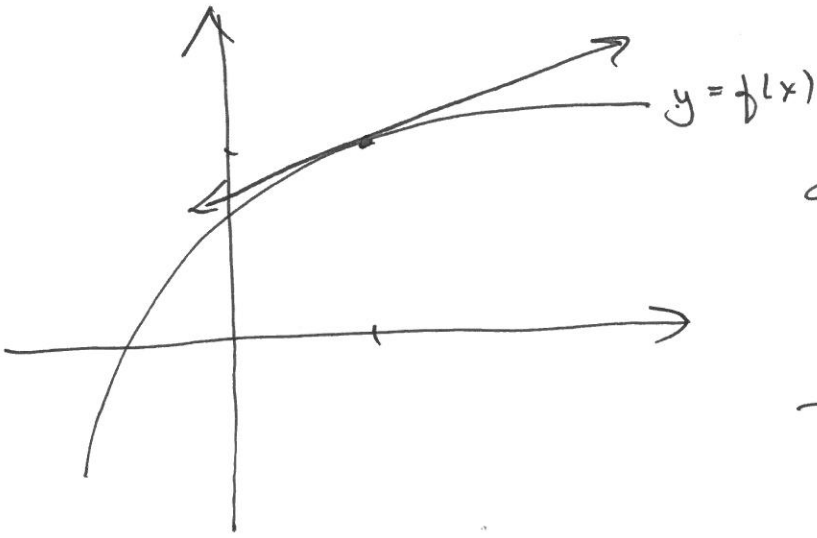
VERTICAL



$$m = \frac{-A}{B}$$

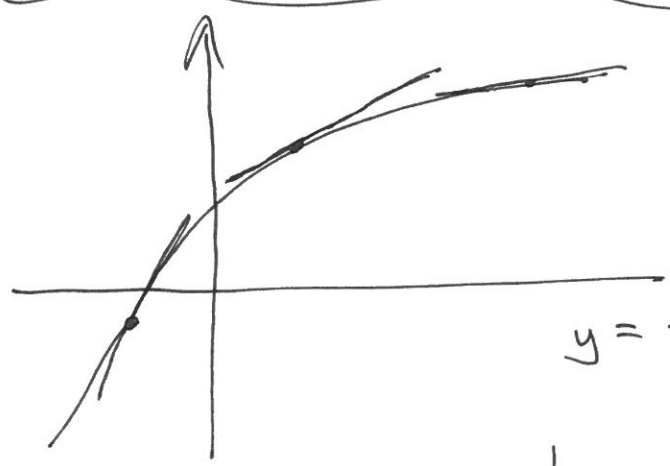
$$y = \left(\frac{-4}{3}\right)x + \left(-\frac{7}{3}\right)$$

↑ slope y = mt



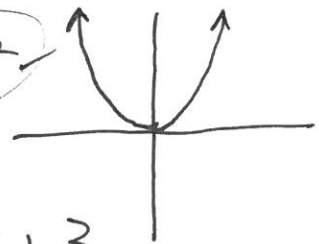
find the equation
of the line
tangent to
 $y = f(x)$ at
 $(4, 6)$
m

$$y - y_1 = m(x - x_1)$$



Parabolas:

$y = x^2$

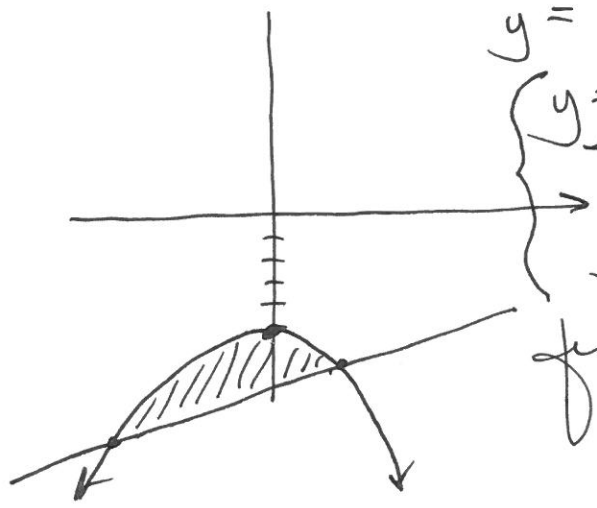


$y = -x^2$

$y = x^2 + 3$

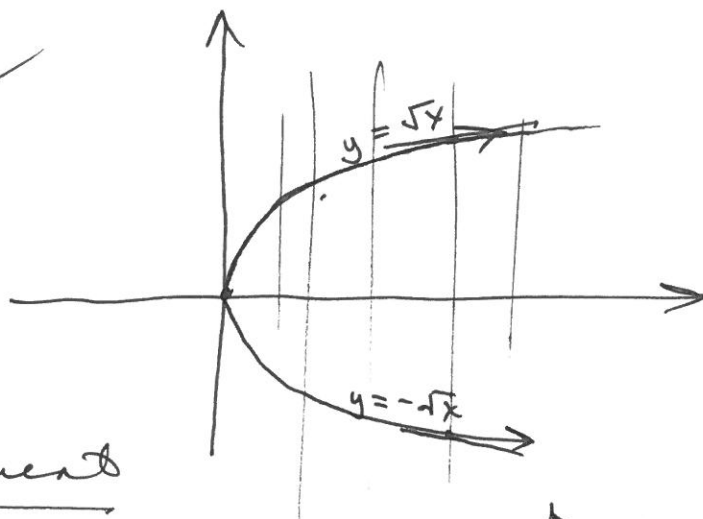
$y = 4x^2$

$y = \frac{-1}{2}x^2 - 5$

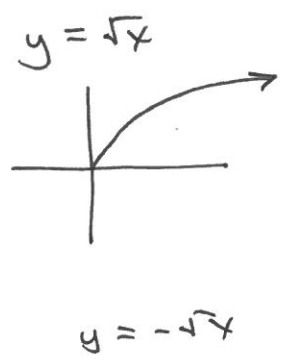


find the area
of this
bounded region

$x = y^2$ ✓



3



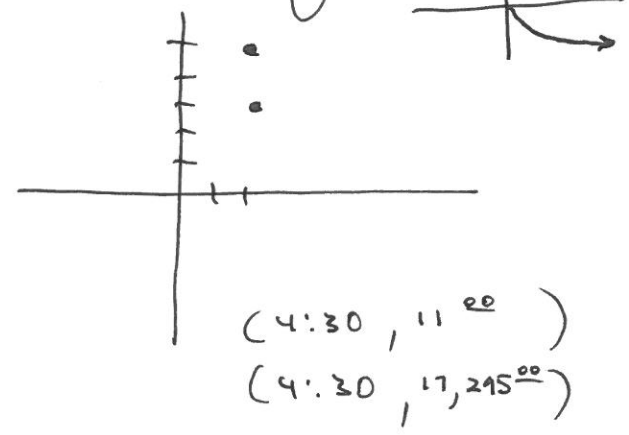
FUNCTION:

each 1st element is assigned a UNIQUE 2nd element

not a function

- (2 sec, 3 ft)
- (2 sec, 5 ft)

- (174123, 2.67)
- (174123, 19.95)



$x = y^2$
 $\pm \sqrt{x} = y$

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

compound interest

$n = 4$ (comp. 4 times per year) (not for CONTIN COMP. INTEREST)
 $n = \infty$

$t = 10$ yrs. (time)

$r = .0285$ (rate)

$P = \$10,000$ (initial value)

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

future value = $\frac{10,000}{1} \left(1 + \frac{0.0285}{4}\right)^{(4)(10)}$ "grand"??

$$A = \frac{15,690.37}{1}$$

.003
 .001
 .007

R.2:

domain: $x \neq \frac{1}{3}$

$$f(x) = \frac{x+5}{3x-1}$$

v.A.: $x = \frac{1}{3}$
 H.A.: $y = \frac{1}{3}$

range: _____

rational function

interval notation: $(-\infty, \frac{1}{3}) \cup (\frac{1}{3}, \infty)$

$(3, 8]$

$$\frac{8}{4} = 2 \quad (\text{check: } 2 \cdot 4 \stackrel{?}{=} 8) \quad \checkmark$$

$$\frac{0}{3} = 0 \quad (\text{check: } 0 \cdot 3 \stackrel{?}{=} 0) \quad \checkmark$$

$$\frac{5}{0} = \alpha \quad (\text{check: } \alpha \cdot 0 \stackrel{?}{=} 5) \quad \underline{\underline{\text{no sol.}}}$$

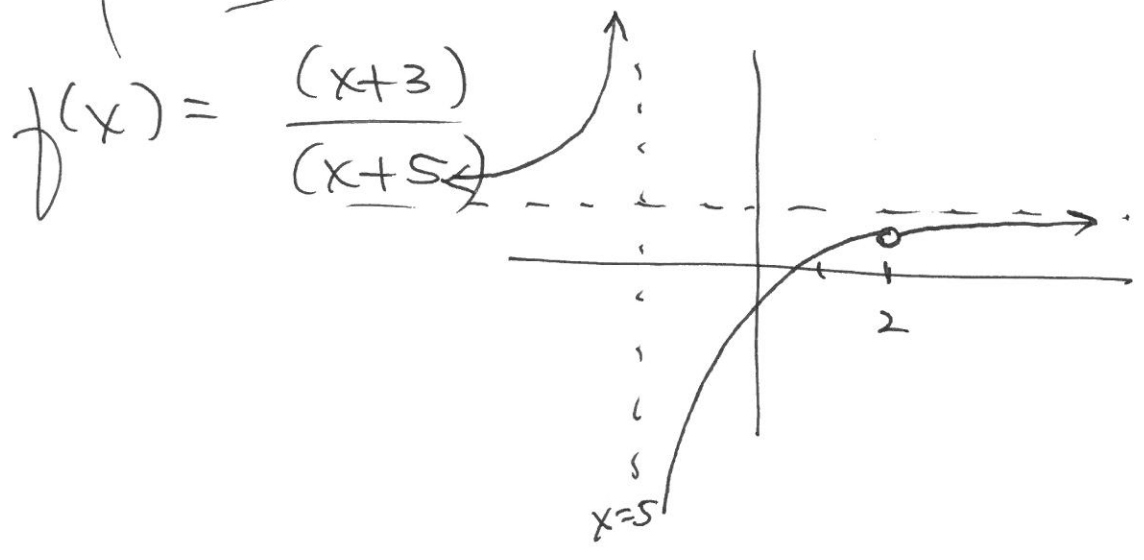
$$\frac{0}{0} = 743 \quad (\text{check: } 11 \cdot 0 \stackrel{?}{=} 0) \quad \checkmark$$

(check: $14 \cdot 0 = 0$)

inf. # of sol.

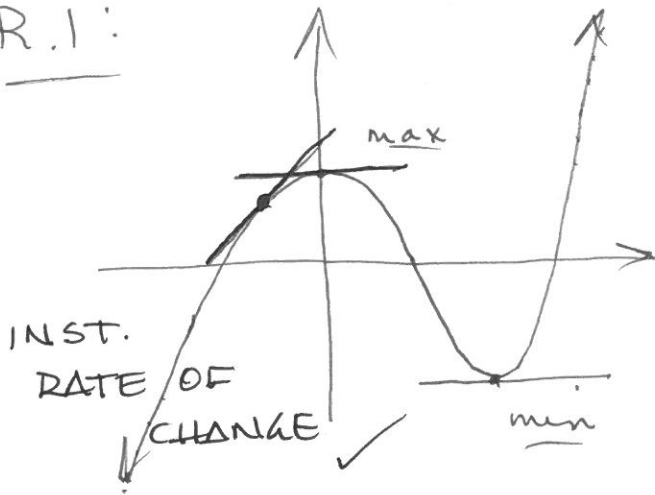
indet. forms: $\frac{0}{0}$

$$f(x) = \frac{(x-2)(x+3)}{(x-2)(x+5)} \quad \underline{\underline{x \neq 2}}$$



Thursday, August 23

R.I.:



(x, y)

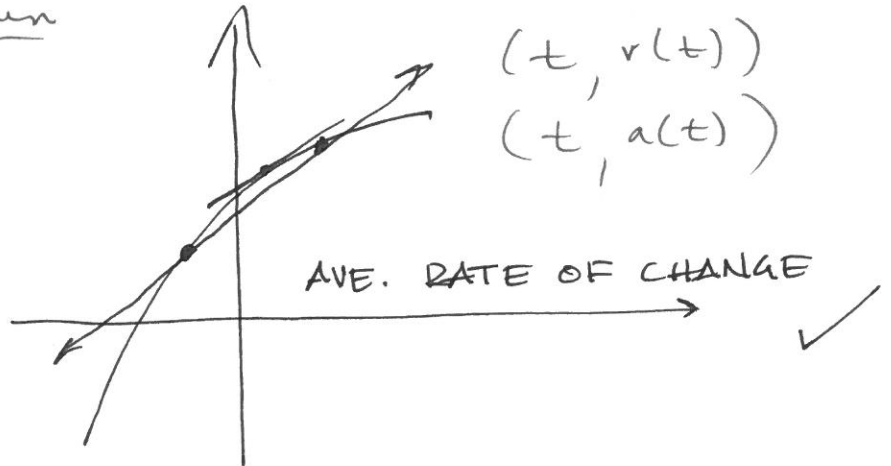
$(x, f(x))$

$(t, s(t))$

↑ ↑
time dist; ht; pos

$(t, v(t))$

$(t, a(t))$



AVE. RATE OF CHANGE

Subject: Re: setting up a Moodle page; TA office hours
From: Alexander Mendez <amendez6@ncsu.edu>
Date: 8/24/18, 11:04 AM
To: John R Griggs <jrgriggs@ncsu.edu>

121-002

Hello Professor Griggs,

I still don't know what hours I will be assigned for the tutoring center, so my schedule isn't quite finalized. However, Fridays from 10:30-11:30 at 3201 SAS Hall is what I am planning for. Let me know if that works.

Best,
Alex

On Thu, Aug 23, 2018, 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

Instructor: John Griggs **TAs:** Ju Wang (jwang74@ncsu.edu), Alexander Mendez (amendez@ncsu.edu), Pratik Misra (pmisra@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, 1:00 – 4:00 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**