You've Really FLIPPED !

Active Learning at its best

Shawna Haider
shawna.haider@slcc.edu
shawnahaider.com

Salt Lake Community College

lec·ture

/ˈlekCHər/

noun

1. an educational talk to an audience, esp. to students in a university or college.
   synonyms: speech, talk, address, discourse, disquisition, presentation, oration, lesson


I'M TEACHING

Thirty years of research in the scholarship of teaching and learning in higher education have demonstrated that when students are engaged in the classroom, they learn more.

In most college classrooms students are not required to pay attention. The real norm is paying civil attention—or creating the appearance of paying attention. Why can students get away with only paying civil attention? The answer is that we as faculty let them.

Jay R. Howard is the dean of the College of Liberal Arts and Sciences at Butler University. His most recent book is titled Discussion in the College Classroom: Getting Your Students Engaged and Participating in Person and Online (Jossey-Bass, 2015).

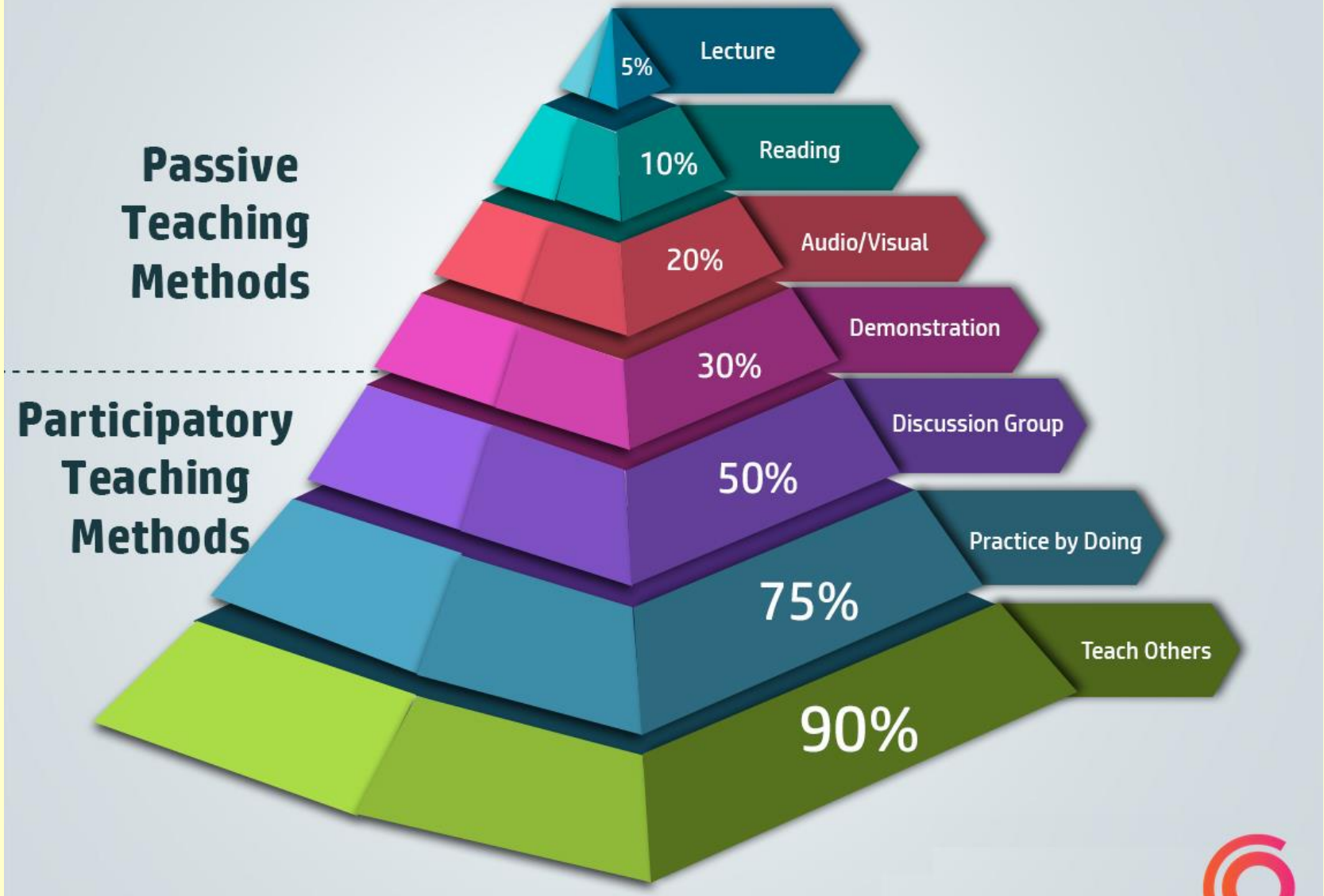
So what should we do?

Active Learning

- **Active learning** refers to techniques where students do more than simply listen to a lecture. Students are DOING something including discovering, processing, and applying information.

THE LEARNING PYRAMID

KNOWLEDGE RETENTION RATES



Adapted from National Training Laboratories, Maine

Active Learning *for Critical Thinking*

CRITICAL THINKING

"Learning without thought is a labor lost."

-Confucius

So how should we structure the course?

Course Information

Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
Week 9
Week 10
Week 11
Week 12
Week 13
Week 14
Week 15
Week 16
Week 17

Algebra & Trig PowerPoints for Review

Week 3

Class Activities: (print these out and bring to class)

- Activity - Continuity
- Activity - The Precise Definition of Limit Graphically

Content Videos & MOM:

Before class Tuesday:

- Watch Continuity
- Complete MOM - Composition & Continuity

Before class Wednesday:

- Watch Continuous Functions

Before class Thursday:

- Watch The Formal Definition of Limit

Textbook:

- 2.4 Continuity.pdf
- 2.5 the Precise Definition of Limit.pdf

Homework Problems:

M 2.4 - Continuity
M 2.5 - Formal Definition of LImit

Weekly Reflection:

Week Three Reflection - Newton

Content Videos & MOM:

Before class Tuesday:

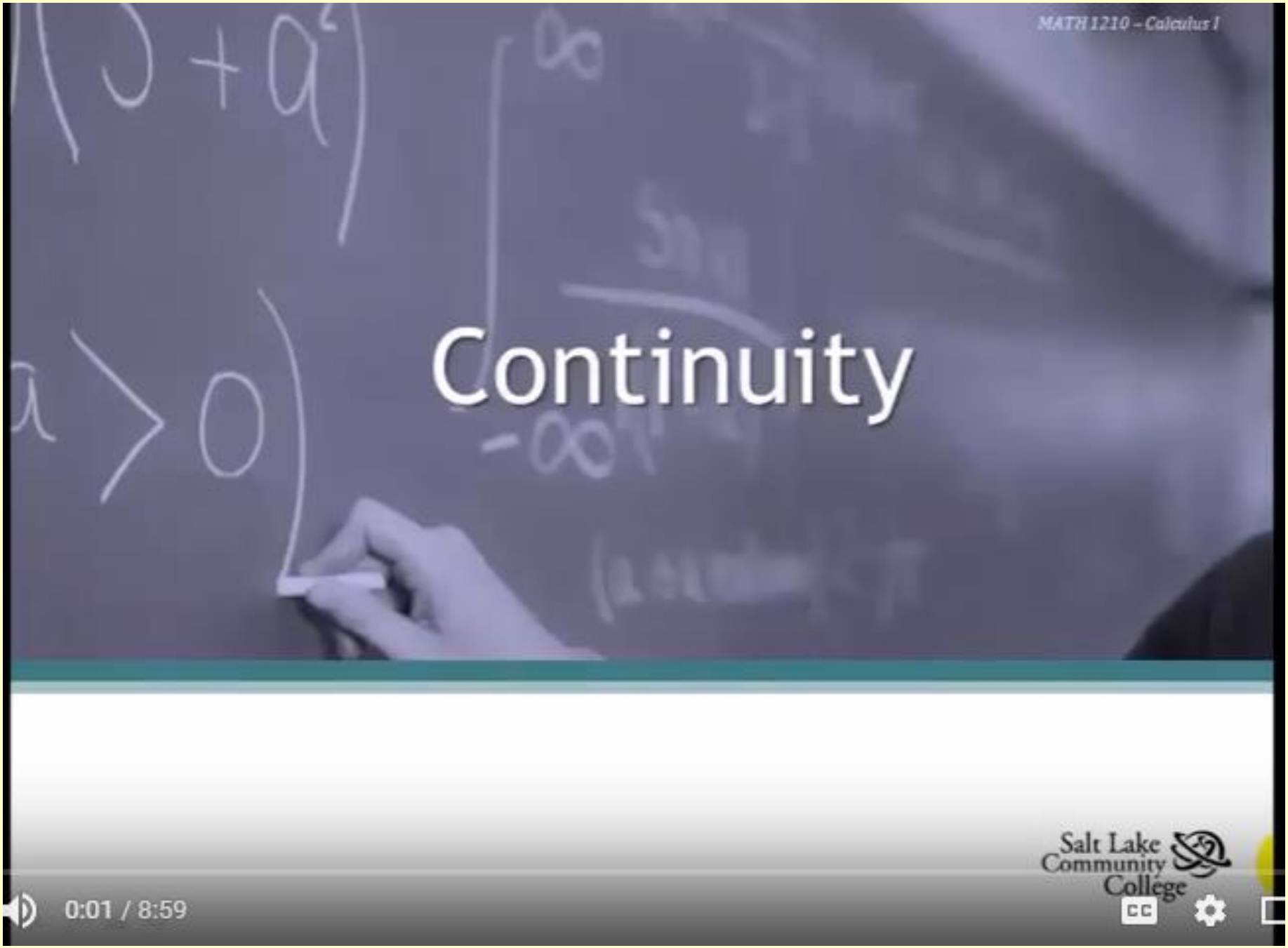
- Watch Continuity
- Complete MOM - Composition & Continuity

Before class Wednesday:

- Watch Continuous Functions

Before class Thursday:

- Watch The Formal Definition of Limit


MATH 1210 – Calculus I
Continuity
Salt Lake Community College
0:01 / 8:59
CC


10 min

MOM - Line and Function Review

Total Points Possible: 4

Questions

- Q 1 (0/1)
- Q 2 (0/1)
- Q 3 (0/1)
- Q 4 (0/1)

Grade: 0/4

Print Version

The equation of the line that goes through the points $(1, 8)$ and $(-9, -9)$ can be written in the form $y = mx + b$

where m is: Preview

and where b is: Preview

Points possible: 1
This is attempt 1 of 3.

Question ID: 1429
License

Submit

MOM - Line and Function Review

Show Intro/Instructions

Questions

- Q 1 (0/1)
- Q 2 (0/1)
- Q 3 (0/1)
- Q 4 (0/1)

Grade: 0/4

Print Version

Given the function $f(x) = -5 + 2x^2$, calculate the following values:

$f(a) =$ Preview

$f(a+h) =$ Preview

$\frac{f(a+h)-f(a)}{h} =$ Preview

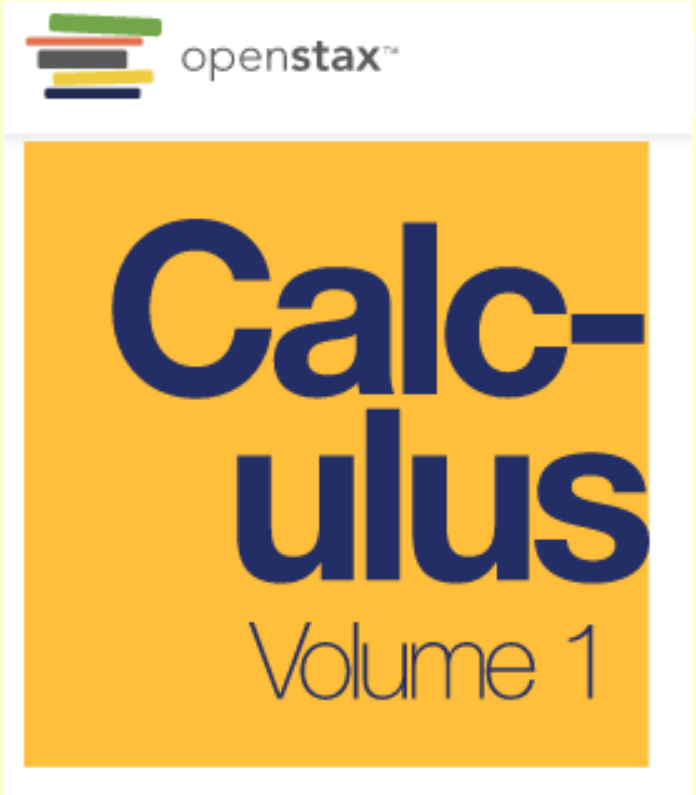
Points possible: 1
Unlimited attempts.

Question ID: 1652
License

Submit

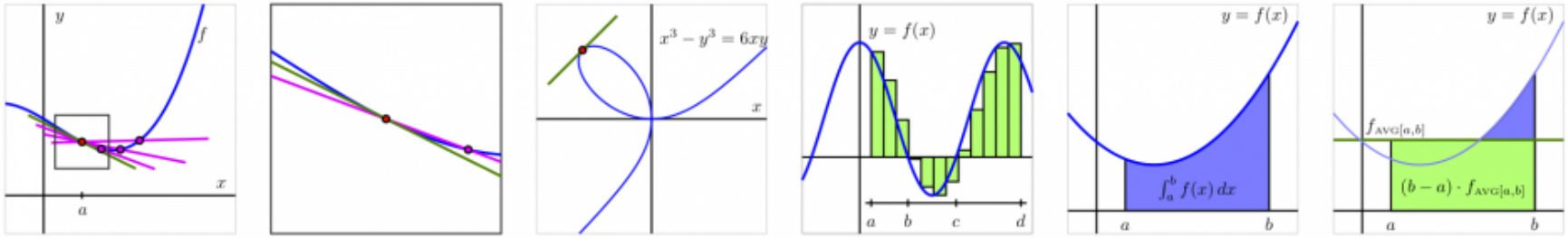
Textbook:

- 2.4 Continuity.pdf
- 2.5 the Precise Definition of Limit.pdf



Class Activities: (print these out and bring to class)

- Activity - Continuity 
- Activity - The Precise Definition of Limit Graphically 

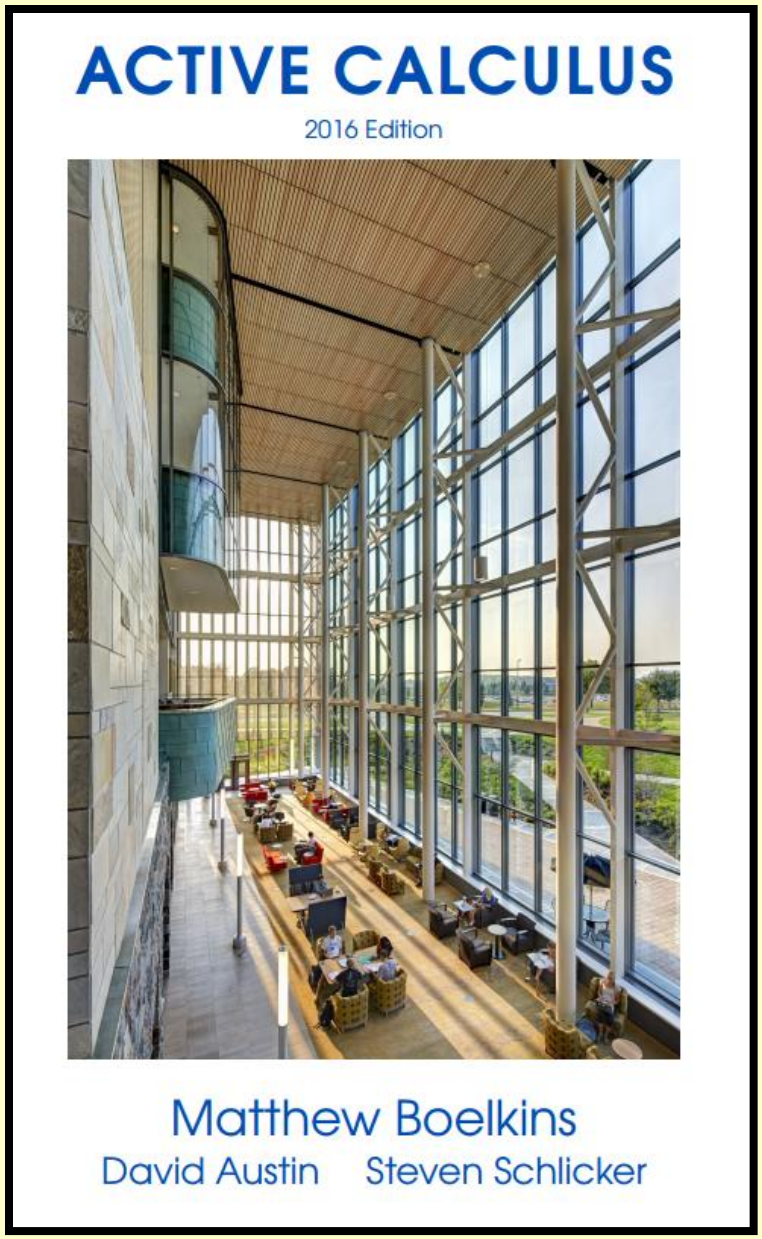


OPENCALCULUS

HOME DOWNLOAD ACTIVE CALCULUS

Devoted to free calculus resources for students, free and open source materials for instructors, and active engagement for all.

Active Calculus

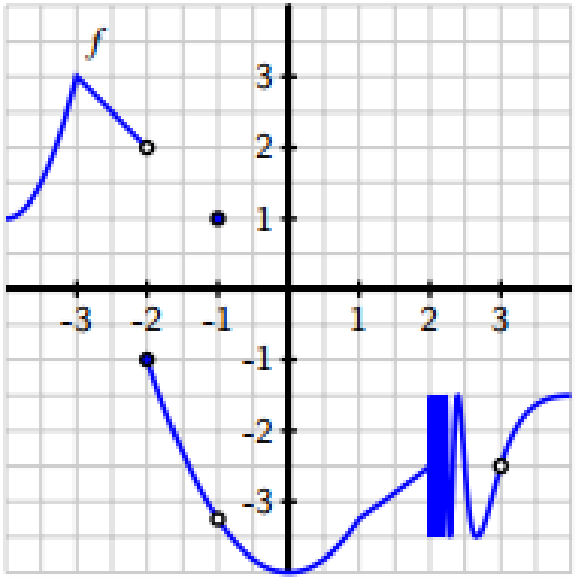


- Grand Valley State University
- Open Educational Resource
- Used for classroom activities


ONTARIO
QUÉBEC
NORTH DAKOTA
MONTANA
MINNESOTA
SOUTH DAKOTA
WISCONSIN
MICHIGAN
Ottawa
Montreal
MAINE
NOVA SCOTIA
PE
NB
OREGON
IDAHO
WYOMING
NEW YORK
IOWA
NEBRASKA
ILLINOIS
INDIANA
OHIO
PENN
Philadelphia
NJ
MA
CT RI
NEVADA
UTAH
COLORADO
KANSAS
MISSOURI
KENTUCKY
VIRGINIA
TENNESSEE
ARKANSAS
OKLAHOMA
MISSISSIPPI
ALABAMA
GEORGIA
SOUTH CAROLINA
ARIZONA
NEW MEXICO
Los Angeles
San Diego
Las Vegas
Dallas
Houston
Gulf of California
Gulf of Mexico
Mexico
39
9
6
108
1375
5
9
5
37
24
202
4136
122
844
161
18
7
63
129
2266
4918
1234
149
897
21
29
159
1
173
69
658
Map data ©2016 Google, INEGI, ZENRIN
Terms of Use

Part 1. A function f defined on $-4 < x < 4$ is given by the graph in Figure below. Use the graph to answer each of the following questions. Note: to the right of $x = 2$, the graph of f is exhibiting infinite oscillatory behavior.

(a) For each of the values $a = -3, -2, -1, 0, 1, 2, 3$, determine whether or not $\lim_{x \to a} f(x)$ exists. If the function has a limit L at a given point, state the value of the limit using the notation $\lim_{x \to a} f(x) = L$. If the function does not have a limit at a given point, write a sentence to explain why.



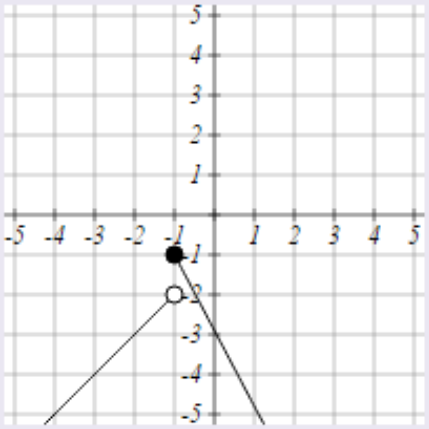
http://www.shawnahaider.com/

Homework Problems:

M 2.4 - Continuity

M 2.5 - Formal Definition of LImit

The graph below is the function $f(x)$



Determine which one of the following explains why continuity is violated at $x = -1$.

- $\lim_{x \to a} f(x)$ does not exist.
- $f(a)$ is undefined.
- $\lim_{x \to a} f(x)$ and $f(a)$ exist but are not equal.

Get help: Video

Weekly Reflection:

Week Three Reflection - Newton

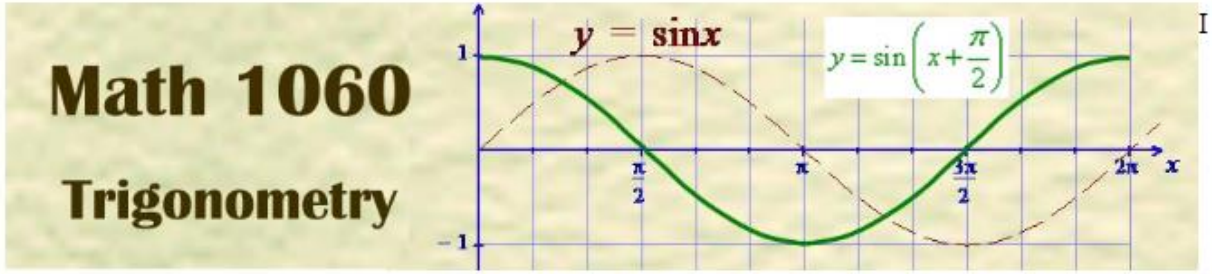
Week Three Reflection - Newton

Have you heard of Sir Isaac Newton? Without Googling him, what do you know about him?

Now read the following article: http://www.storyofmathematics.com/17th_newton.html

What are three things you learned about Newton in regards to calculus from the article?

Active Trigonometry



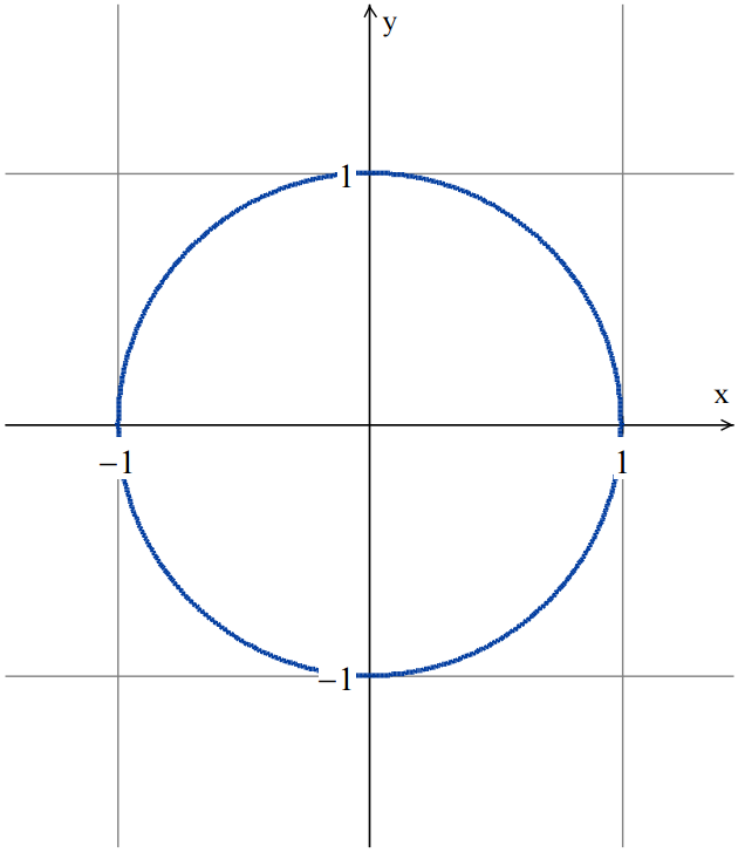
Course Information	MyOpenMath	Course Materials

Week 1 Week 5 Week 9 Week 13 Week 17
Week 2 Week 6 Week 10 Week 14
Week 3 Week 7 Week 11 Week 15
Week 4 Week 8 Week 12 Week 16

Activity: The Unit Circle

Part 1.

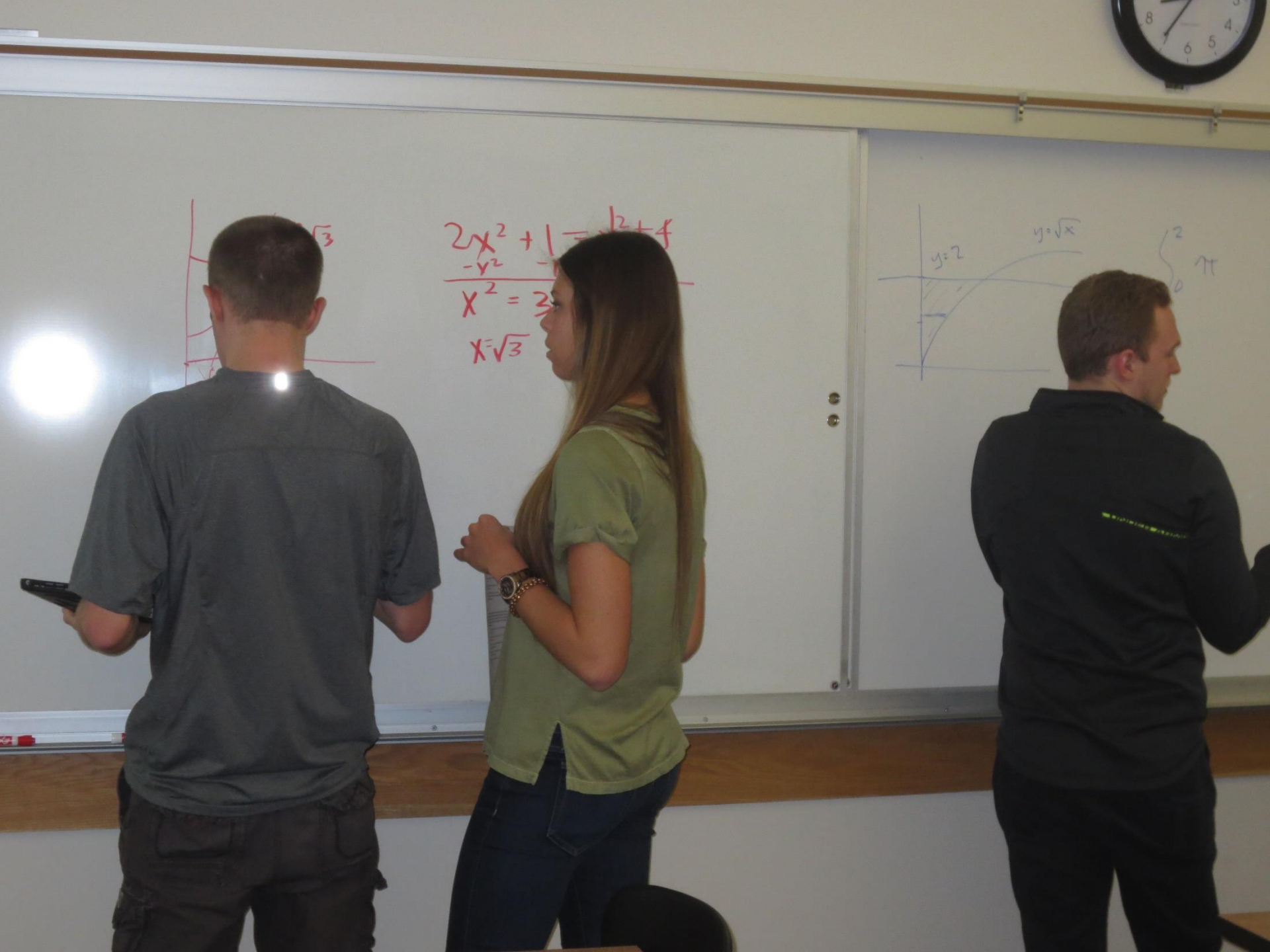
a) What is the equation of the unit circle shown here?



b) Plot and label each of the x and y intercepts of the circle.

c) For the point (x, y) on the circle, if $x = \frac{1}{2}$, find y and plot and label the point.

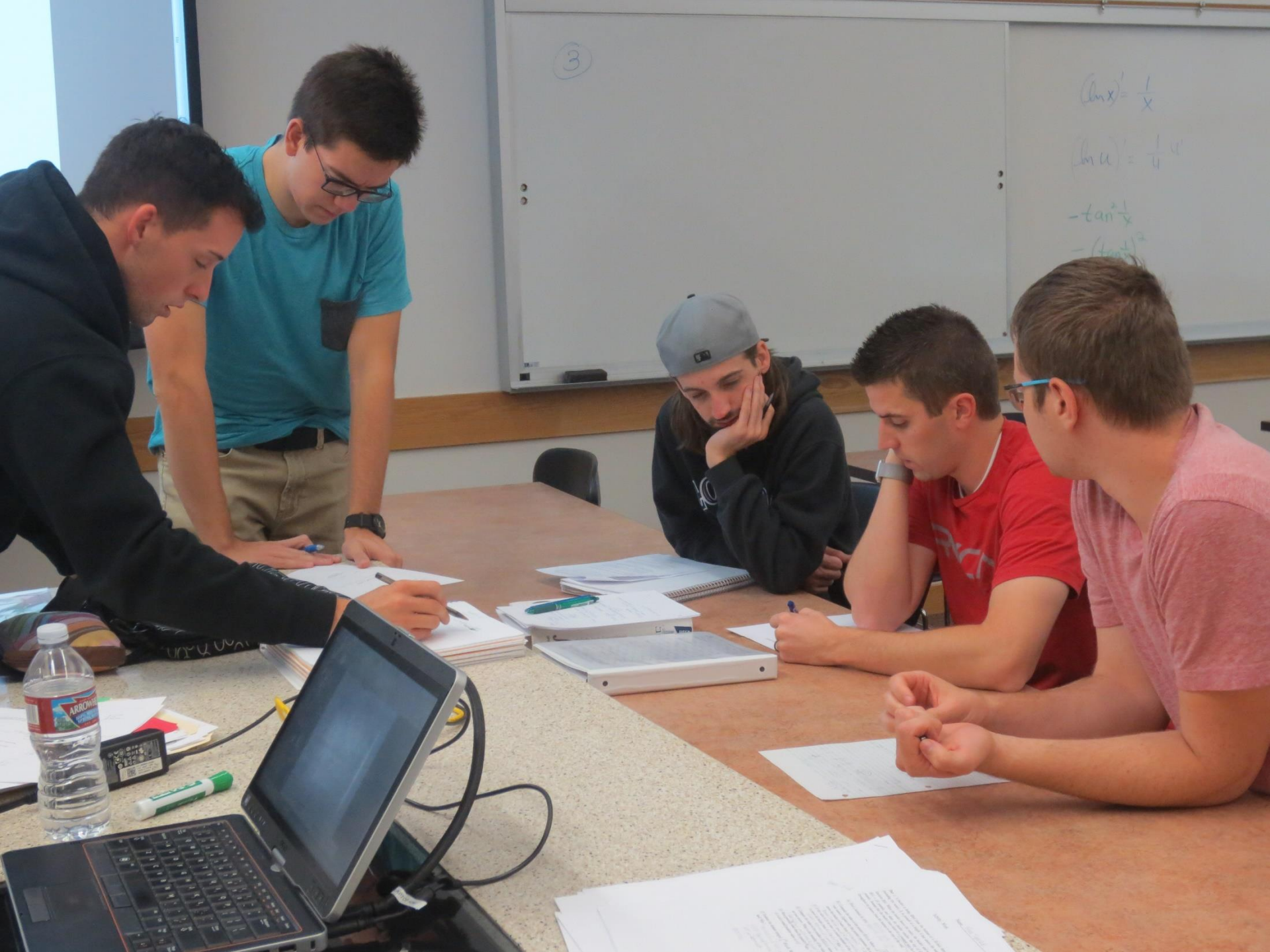
So what is class like?


$2x^2 + 1$
$x^2 = 3$
$x = \sqrt{3}$
$y = 2$
$y = \sqrt{x}$


c)
y=x^3
y=√x
1
1
-1
a:
Activity Volumes of Revolution.pdf - Adobe Acrobat Pro
In addition, draw a re
definite integral whos
evaluate the integrals
(a) The region S
revolve S abo
(b) The region S
revolve S abo


2011

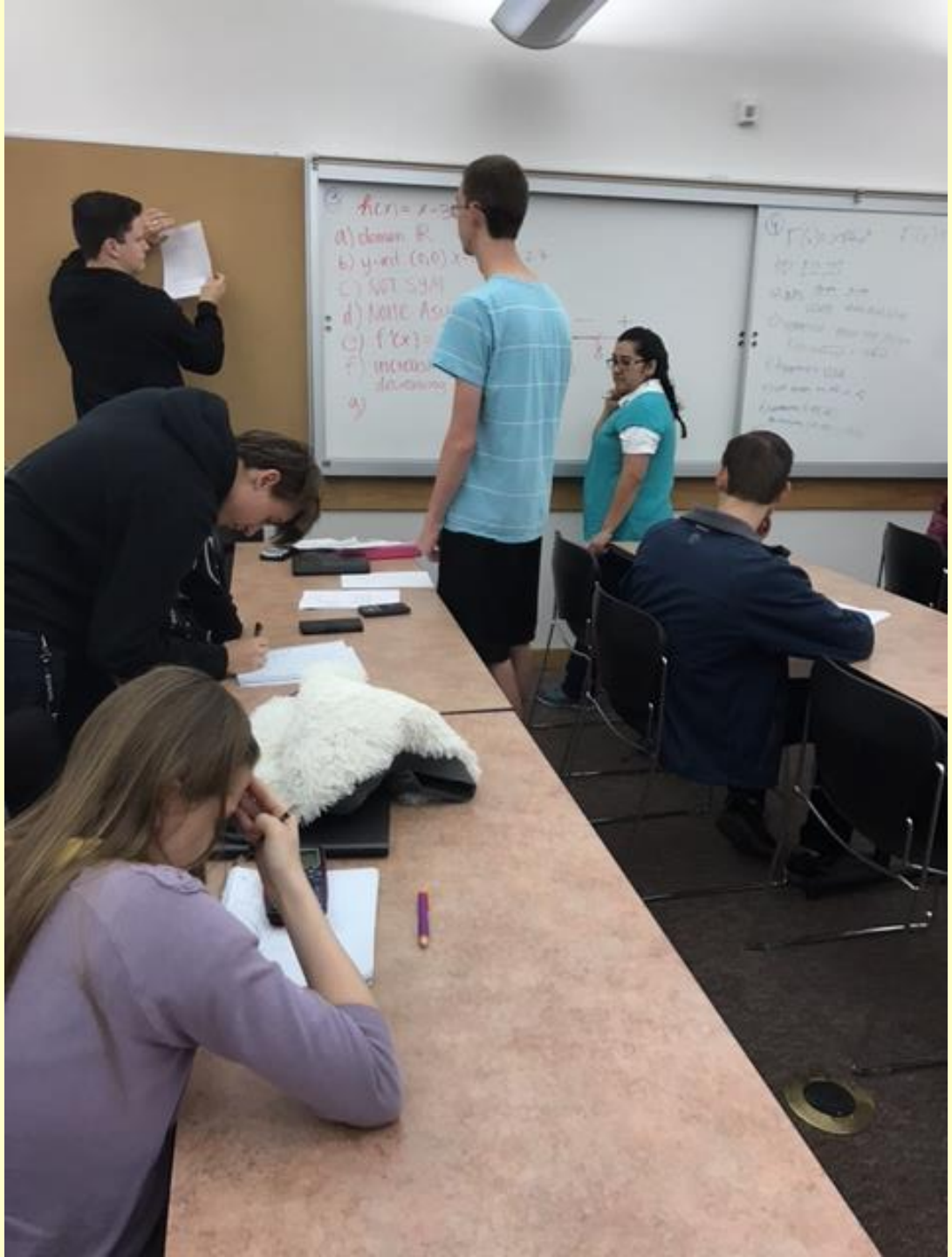

NO ONE DOES TV LIKE
DIRECTV
Now part of the
AT&T family

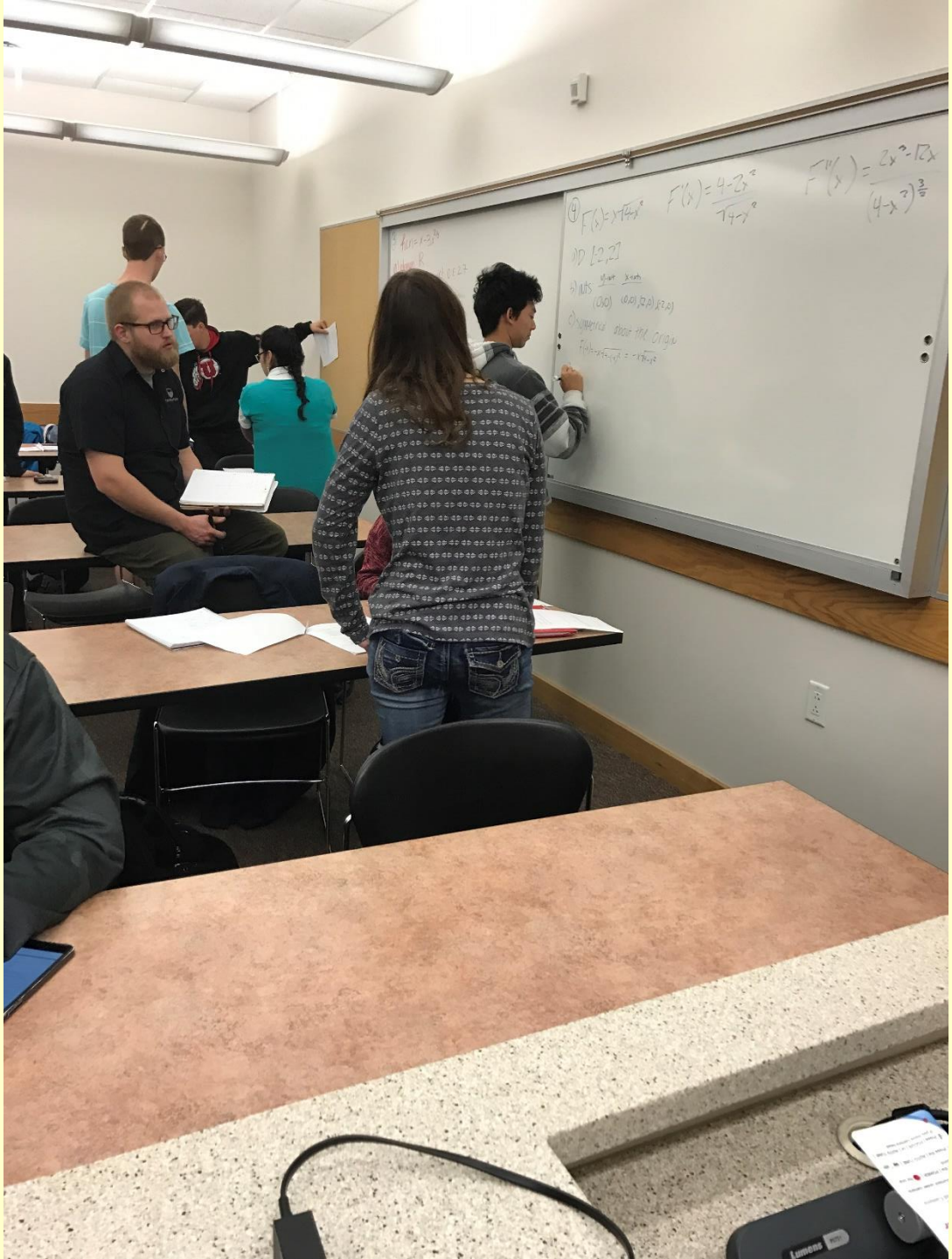



C Washer
C Shell
D Washer
D Shell


PLEASE TURN OFF PROJECTOR AFTER EVERY CLASS
AV SWITCHBOX
DISPLAY AUX


Antiderivatives





③ $h(x) = x - 3x^{2/3}$

1. $\mathbb{R}$
2. $h(0) = 0 - 3(0)^{2/3} = (0,0)$ y intercept

$x - 3x^{2/3} = 0$

$x^{2/3}(x^{1/3} - 3) = 0$

$x^{2/3} = 0$, $x = 0$ $(0,0)$ x intercept

$x^{1/3} - 3 = 0$

$(x^{1/3})^3 = (3)^3$ $(27,0)$ x intercept

$x = 27$

3. symmetry: neither

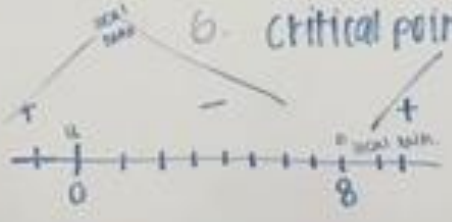
$h(-x) = -x - 3x^{2/3}$

4. no asymptotes
5. $h'(x) = 1 - \frac{2}{x^{1/3}}$

$1 - \frac{2}{x^{1/3}}$ undefined at $x = 0$

0 at $x = 8$

6. critical points: 0, 8

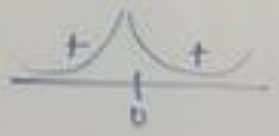


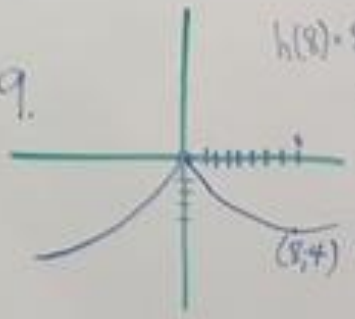
increasing: $(-\infty, 0)(8, \infty)$

decreasing: $(0, 8)$

7. $h''(x) = \frac{2}{3x^{4/3}}$

points: 0

8. 

9. 

$h(8) = 8 - 3(8)^{2/3}$

$8 - 12$

-4

$(8, -4)$

So what do students think?

I hated this format in the beginning but now I enjoy and like the format! I wish all classes were like this! I am usually not very good at math but I feel like I learned everything so well!

Here I have some videos of student comments on their experience. They are available at my website but eliminated here because the file size was too large.

So what do you think?

shawna.haider@slcc.edu