

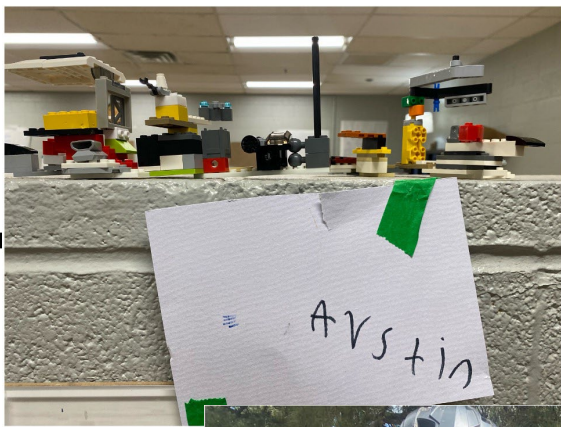
TACTIVITIES: AN EMBODIED WAY TO ENGAGE LEARNERS

DR. ANGIE HODGE-ZICKERMAN

PROFESSOR, NORTHERN ARIZONA UNIVERSITY



A special thank you to my many collaborators over the years.



THINKING ABOUT INQUIRY-BASED LEARNING...

- Because of IBL, what can we do in the classroom that we couldn't do before teaching with IBL?
- How do we fundamentally change how we teach - using IBL in our classrooms?
- What can we do BEYOND “better, faster, easier”?



INQUIRY-BASED LEARNING

What is the role of
the teacher?

What is the role of
the student?

MY INQUIRY-BASED LEARNING JOURNEY



ENGAGED LECTURES



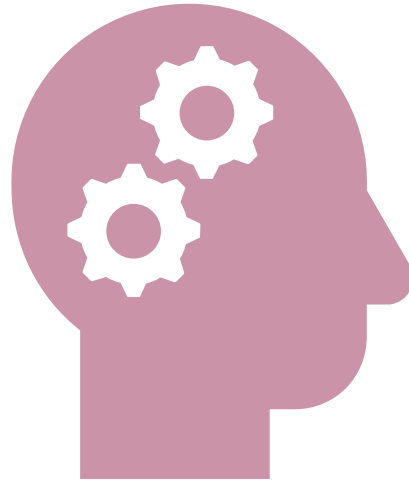
INQUIRY-BASED LEARNING IN
UPPER-DIVISION COURSEWORK



ACTIVE LEARNING CALCULUS
(UNOMAHA & CU BOULDER)



INQUIRY-BASED LEARNING/ACTIVE
IN ALL THE THINGS



ACTIVE LEARNING CALCULUS PARTNERSHIP BRINGS ABOUT
TACTIVITIES

TRY A VIRTUAL TACTIVITY!
NOTE: IT IS YOUR JOB TO "FIGURE OUT" THE DIRECTIONS.

Hey, students!

Go to student.desmos.com and type in:

N2

GN

FZ

WHAT IS A TACTIVITY?
THINK, WATERFALL SHARE



WHAT IS A TACTIVITY?

- A tactile activity that encourages collaboration and engagement.
- Tactile (movable pieces)
- Actively engages students
- Can be used to help teach or to review a concept



WHAT IS A TACTIVITY?

- Most are designed for groups of 2-4 students
- Often self-checking
- Very few (if any) directions needed
- No moves are permanent



WHAT IS A TACTIVITY?

- TACTivities have an easy entry point for all.
- Our best TACTivities have a twist...



SOME TYPES OF ACTIVITIES



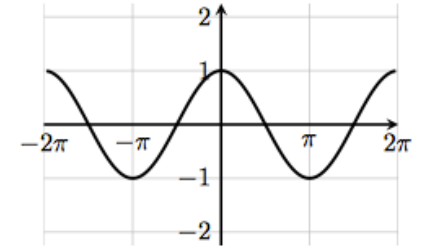
SORTING TACTIVITIES

$$f(x)$$

1

$$\cos(x)$$

L



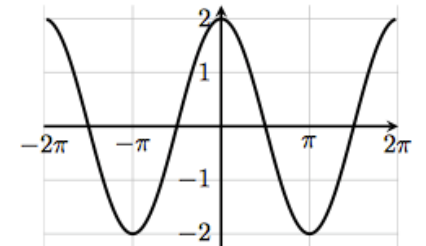
@

$$2f(x)$$

2

$$2\cos(x)$$

I



∞

$$e^x$$

A

$$\sum_{n=0}^{\infty} \frac{x^n}{n!}$$

6

$$1 + x + \frac{x^2}{2} + \frac{x^3}{3!} + \frac{x^4}{4!} + \dots$$

j

TAYLOR SERIES MATCHING

Match each function to its Taylor series and corresponding Taylor polynomial.

Dominoes



DOMINOES USING GOOGLE SLIDES

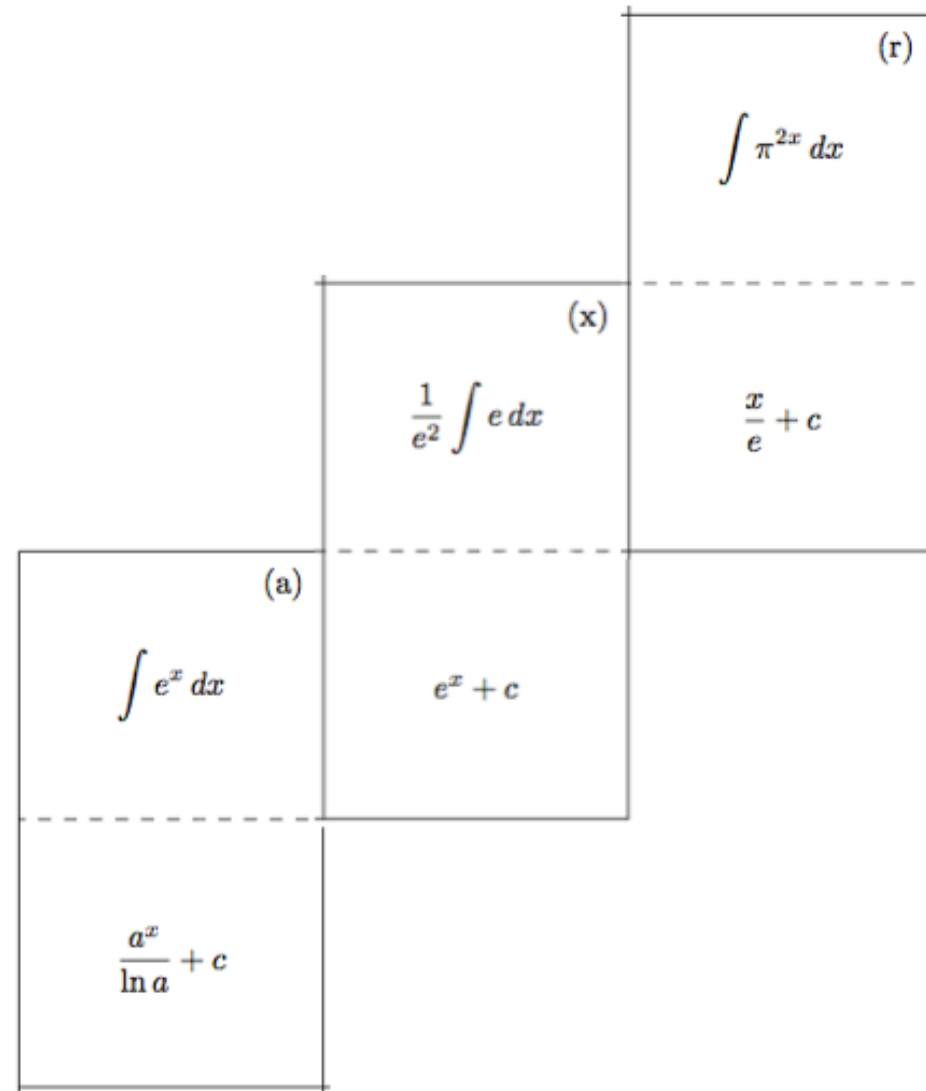
	Florida		Wyoming		Delaware		Minnesota
Michigan	It's the world's popcorn capital	Alaska	Only state ever to turn down the Olympics	Hawaii	Mammoth numbers of mammoths died here	Indiana	The Peace Garden State
This state is the birthplace of Kool-Aid	Arkansas	The peach state	North Dakota	Famous for its diamond trade	Arizona	Cheyenne is the state capitol	Nebraska
Colorado	The 49 th state to join the union	Iowa	The First State	South Dakota	Has more churches per capita than any other state	Kentucky	Has about 1,021 people per square mile
It used to be part of Virginia	Georgia	Crazy Horse monument is here	Rhode Island	Has its own language	Vermont	Montpelier is the state capitol	Mississippi
	The magic capital of the world		The only place where both gators and crocs coexist		Cutting down a cactus can get you prison time here		Land of 10,000 Lakes

IF TIME: EXPLORE STATE FUN FACT DOMINOES

- State_fun_facts

INTEGRAL DOMINOES!

- Matching integrals to their antiderivatives



CREATE A TACTIVITY!



Desmos activity builder: <https://teacher.desmos.com>



Card sort



Ordering steps



Interactive slides



Google slides



Dominoes



Other - ???

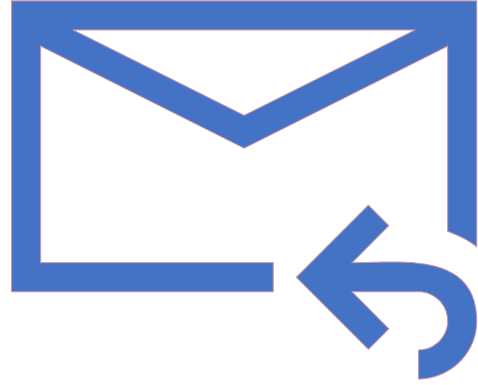
$\frac{x^\pi}{\pi} + c$	$\frac{x^{n+1}}{n+1} + c$
(m)	(n)
$\int \frac{x^\pi}{x} dx$	$\int x^n dx$
$2 \sin^{-1} x + c$	$\frac{e^{2x}}{2} + c$
(s)	(t)
$\int \frac{4}{\sqrt{4-4x^2}} dx$	$\int e^{2x} dx$

QUICK HINTS

- See the “twist?”
- Think about printing.
- Try on paper.
- Laminate on colored paper.
- Store in Ziplocks.
- Reuse over and over again..

HOW TO MAKE A GOOGLE PLACEMAT ACTIVITY

- Step 1: After the desired background for the slide is created in Google Slides, use the "Download" tool under the "File" menu in Google Slides to save the slide to your computer as a JPEG file.
- Step 2: Click on the "+" symbol in the upper left of Google Slides to add a new, blank slide to your presentation.
- Step 3: Click on the "Background" menu in the Google Slides toolbar, then click on "Choose Image" to select the JPEG you saved to your computer in the previous step. This will import this JPEG as a fixed, uneditable background for your new slide.
- Step 4: If you wish, you can now save a separate copy of your editable template, in case you want to use or further edit that template in the future. (Use the "Make a copy" submenu from the "File" menu.) You can then delete the editable slide from the presentation that you will be using in class, and keep the slide with the fixed background.
- Step 5: You may now add whatever moveable pieces you want to your new slide with the fixed background. Users who have edit access to your slides will be able to move these new pieces around, but will not be able to accidentally (or intentionally!) move or alter the background.



THANK YOU AND QUESTIONS

Angie.Hodge@nau.edu