

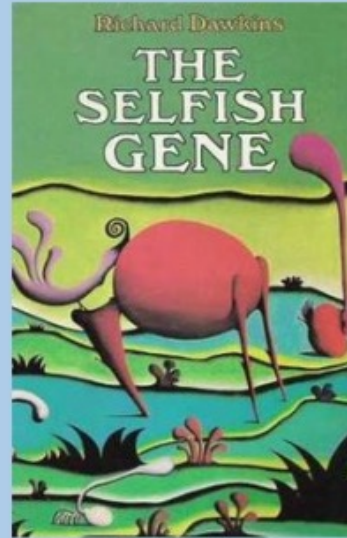
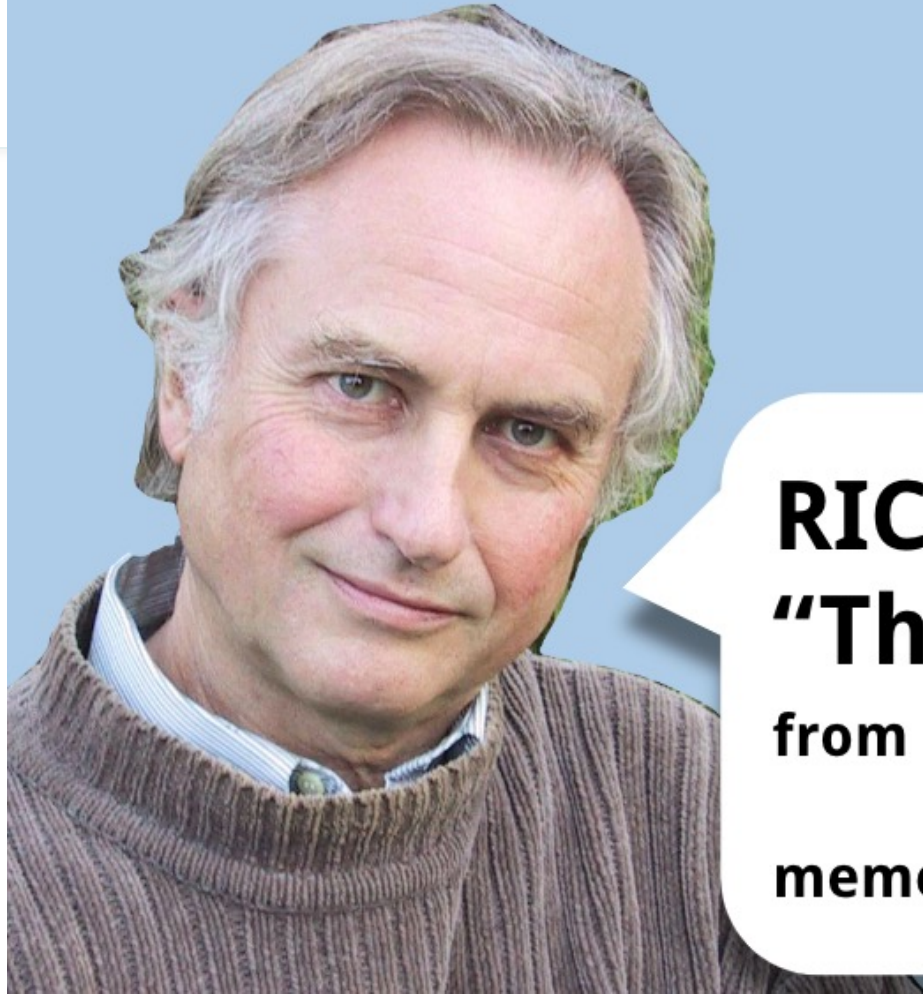


From Meme to Virtual Reality

Lecture 20 - 19th December 2023

Technology in Mathematics Education

WHAT ARE MEMES?



1976

RICHARD DAWKINS **"The Selfish Gene"**

from Greek μίμημα 'that which is imitated'

meme : human culture = gene : biological heritage

WHAT ARE INTERNET MEMES?

1993

MEMES

Fashions

Ideas

Art

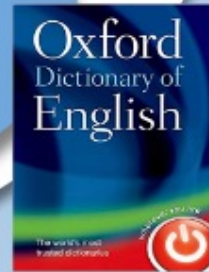
Tunes

INTERNET MEMES

*Captioned images
(Image Macros)*

Videos

Texts



➡ A digital artefact, typically **humorous in nature**, that is copied and **spread rapidly** by Internet users, often with **slight variations**

Oxford Dictionary of English, **2019**

EXAMPLES OF DIVERSE INTERNET MEMES GENRES

Performances:
the bottle cap challenge



Photo Fads:
the leaning tower of Pisa forced perspective



Image macros:
the Success Kid



THE EVOLUTION OF IMAGE MACROS



from LOLcats

tics

...and mathematics

OUR FOCUS: MATHS IMAGE MACROS

[source Facebook]

WHEN YOUR LONG DIVISION



ENDS UP WITH NO REMAINDER

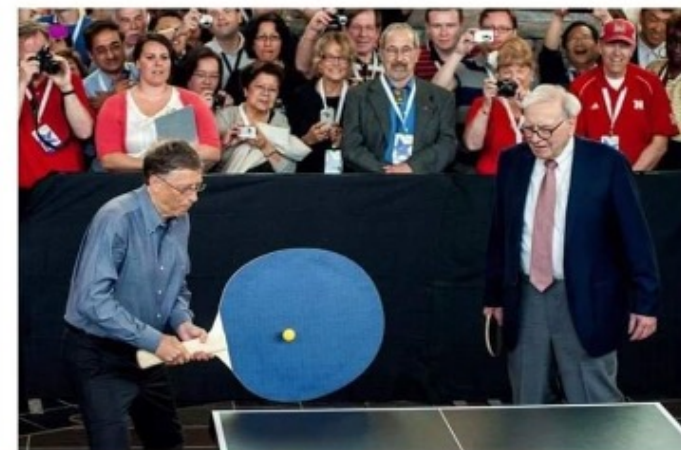
imgflip.com

Arithmetics



Trigonometry

Me using $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ to find roots of $x^2 - 1 = 0$.



Algebra

THE **TRIPLE-S** CONSTRUCT OF THE PARTIAL MEANINGS OF INTERNET MEMES (BINI & ROBOTTI, 2019)



SINGLE-PANE



MULTI-PANE



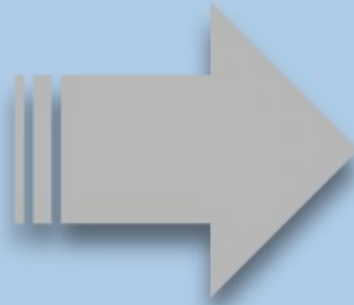
OBJECT-LABELING



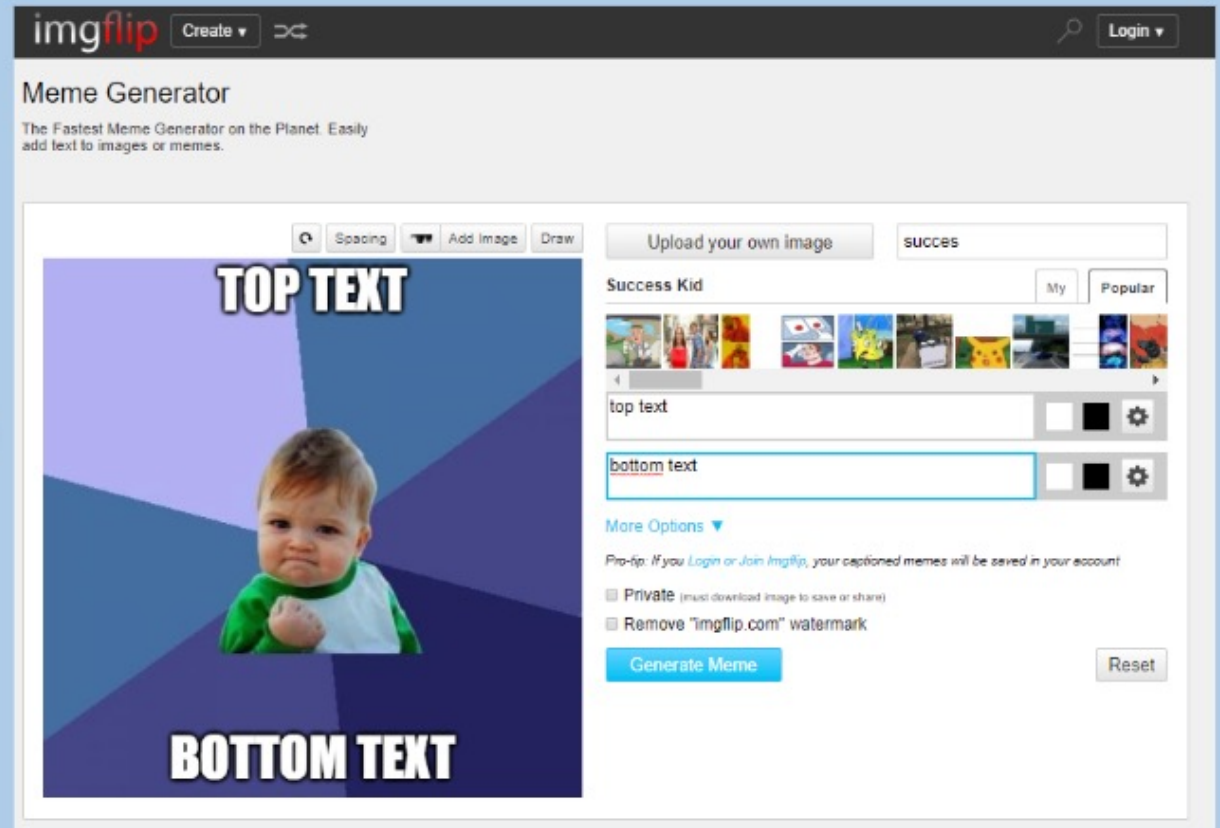
WHITE BORDER

The **first partial meaning** is **STRUCTURAL** and lies in having a recognizable and consistent aesthetic, given by the text font, colour and position, and by the image visual impact.

MOBILE DEVICES' SCROLLING GESTURE SHAPES STRUCTURAL RULES



STRUCTURAL RULES SHAPE MEME GENERATOR WEBSITES

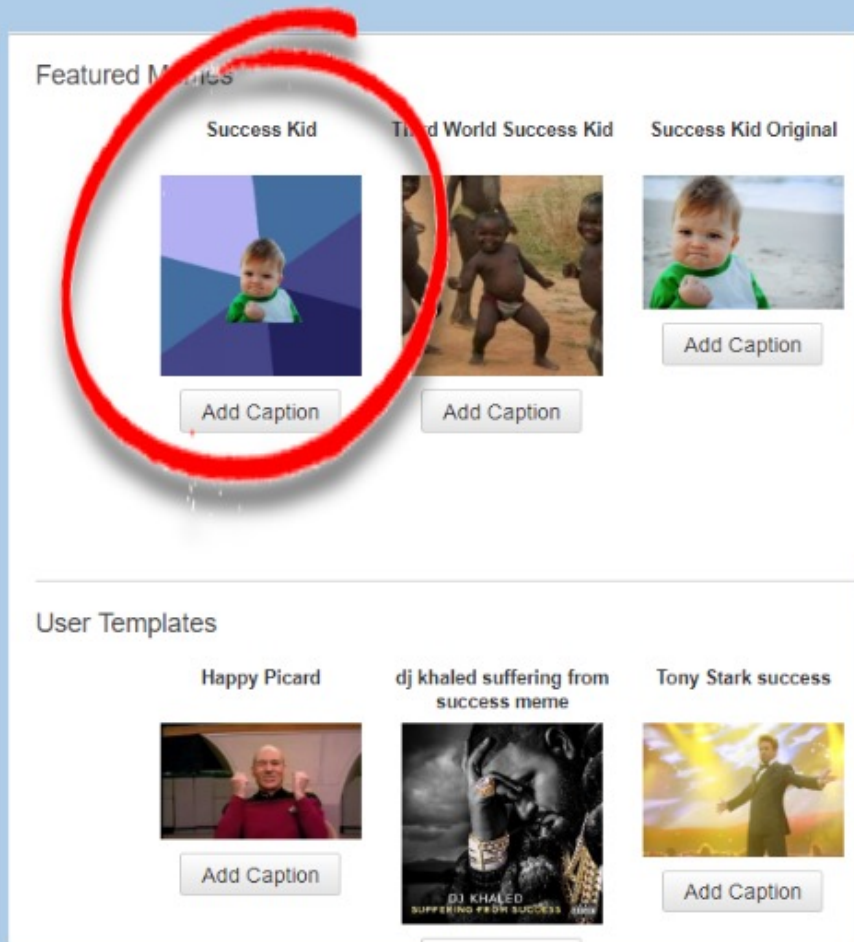


THE **TRIPLE-S** CONSTRUCT OF THE PARTIAL MEANINGS OF INTERNET MEMES (BINI & ROBUTTI, 2019)



The **second partial meaning** is ***SOCIAL*** and lies in the shared conventions of viral images, compositional setups and syntaxes.

THE MEMESPHERE SHAPES SOCIAL RULES LIKE TEMPLATES NAME & USE



SOCIAL RULES SHAPE WEBSITES LIKE KNOW YOUR MEME



THE **TRIPLE-S** CONSTRUCT OF THE PARTIAL MEANINGS OF INTERNET MEMES (BINI & ROBUTTI, 2019)



general humor



maths



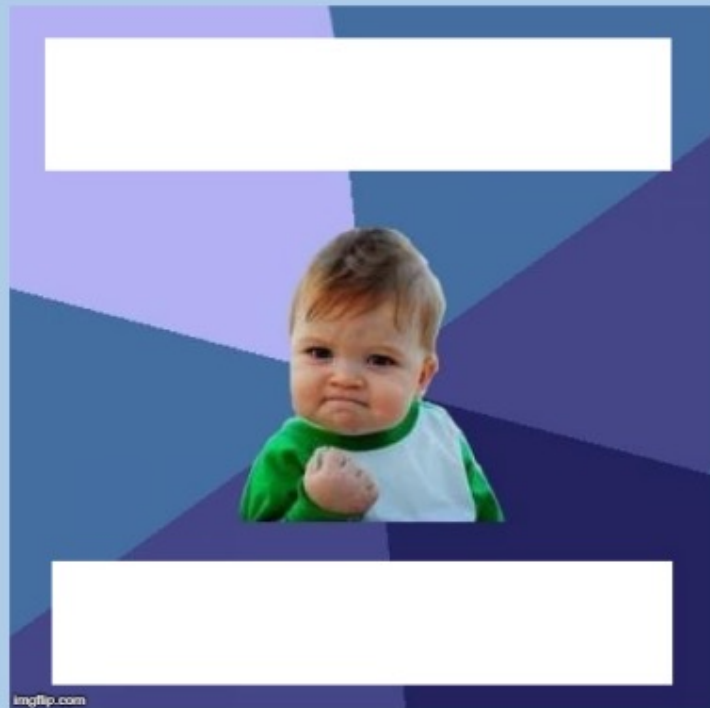
Politics

[Obama's staff on Twitter, June 2013]

The **third partial meaning** is ***SPECIALIZED*** and lies in images, symbols or text referring to a specific topic.

The Success Kid

Structural Meaning



Social Meaning

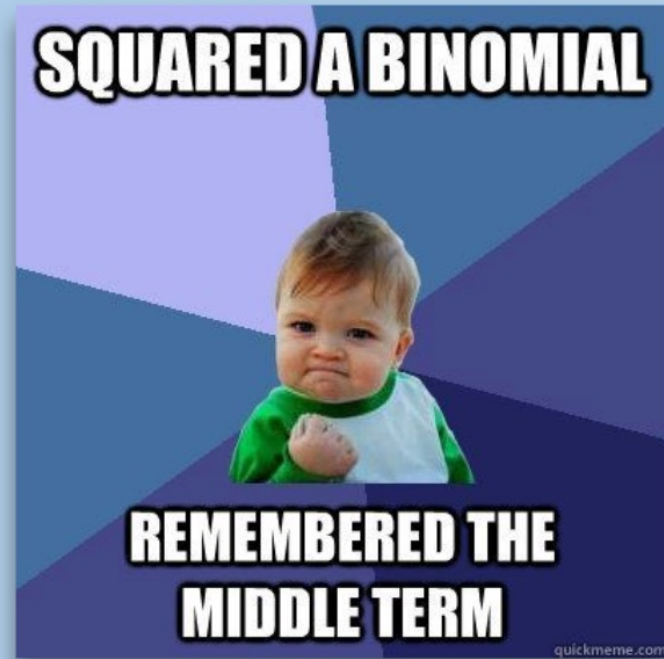


Didactic use: emphasize correct practices related to positive emotions

EXAMPLES



EXAMPLES

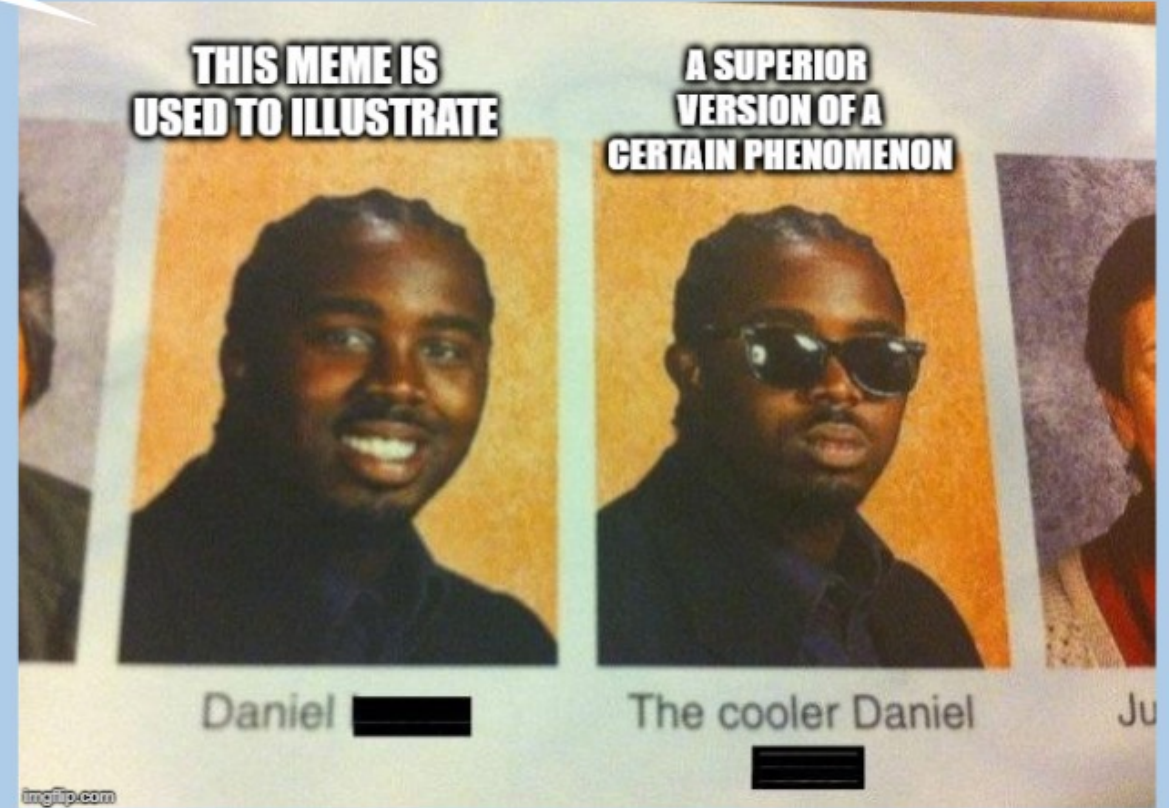


The cooler Daniel

Structural Meaning

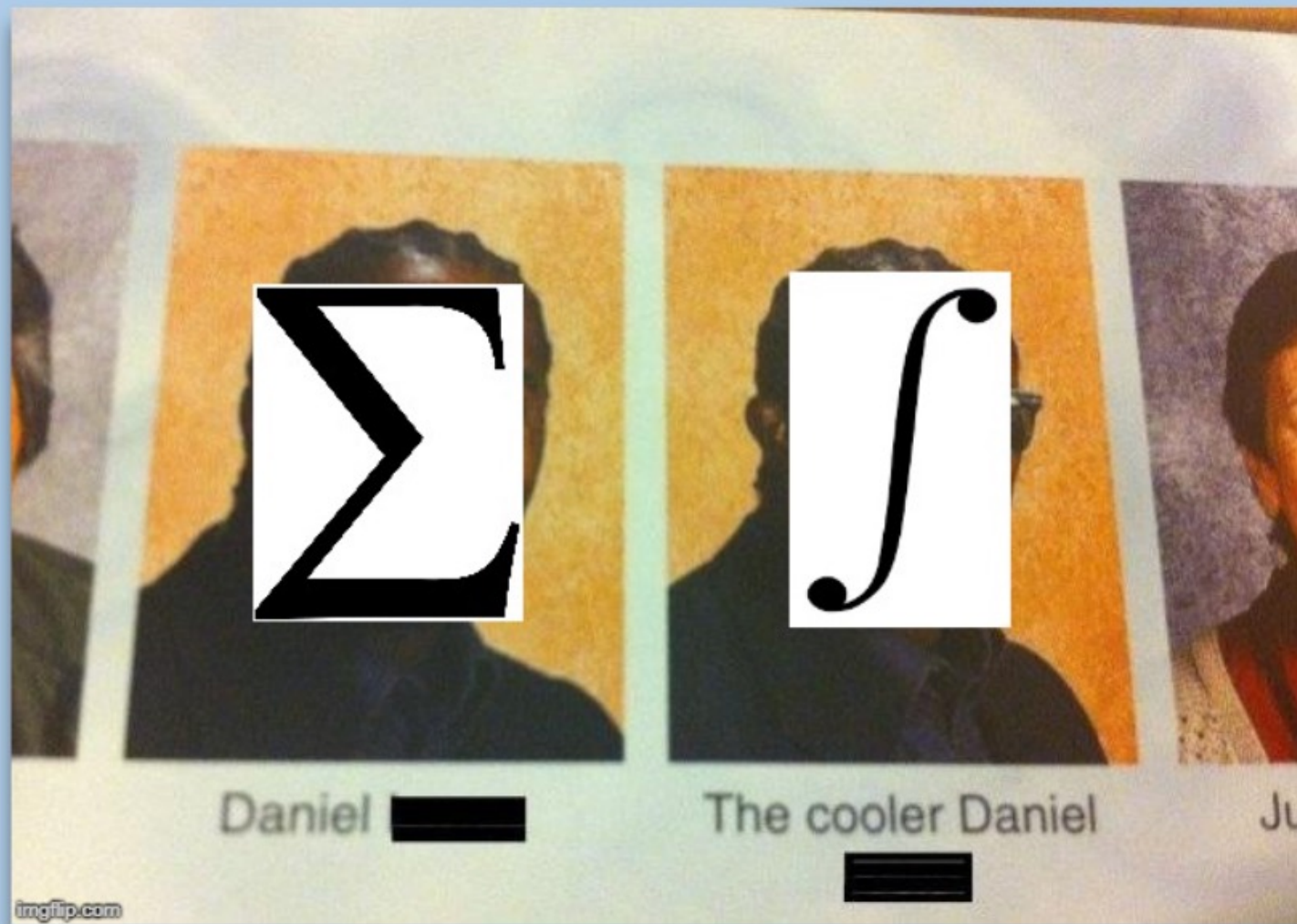


Social Meaning



Didactic use: compare different levels of mathematical concepts

EXAMPLES



Distracted boyfriend

Structural Meaning



Social Meaning



Didactic use: draw attention to misconceptions and classic errors

EXAMPLES



EXAMPLES



Bill Gates' giant ping pong paddle

Social Meaning

Structural Meaning

This meme is used to make fun at a tool that is too powerful for a particular job



Didactic use: focus on optimized procedures

EXAMPLES

Using a calculator to make sure $4+3$ equals 7 on a test



EXAMPLES

Me using $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ to find roots of $x^2 - 1 = 0$.



OTHER EXAMPLES

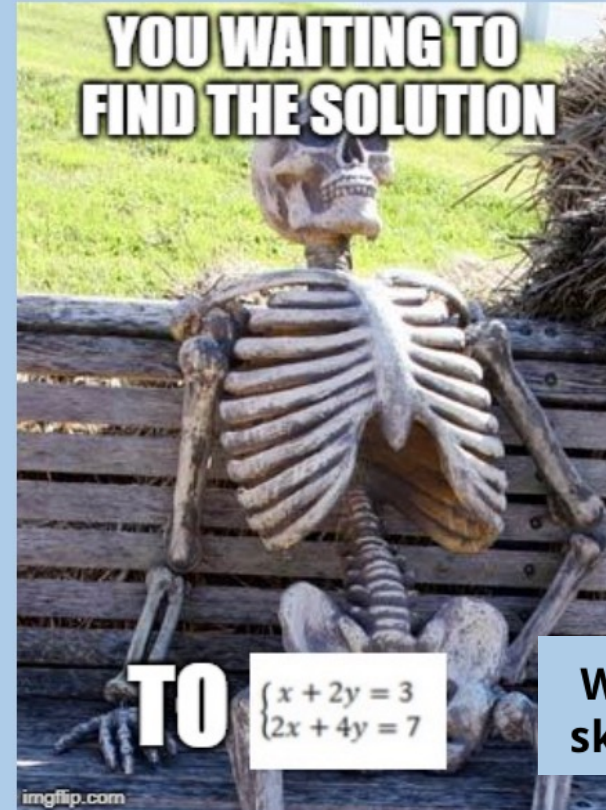
$$\int e^x x^2 dx$$



Me Opening up
to Someone

OTHER EXAMPLES

YOU WAITING TO
FIND THE SOLUTION



TO

$$\begin{cases} x + 2y = 3 \\ 2x + 4y = 7 \end{cases}$$

Waiting
skeleton

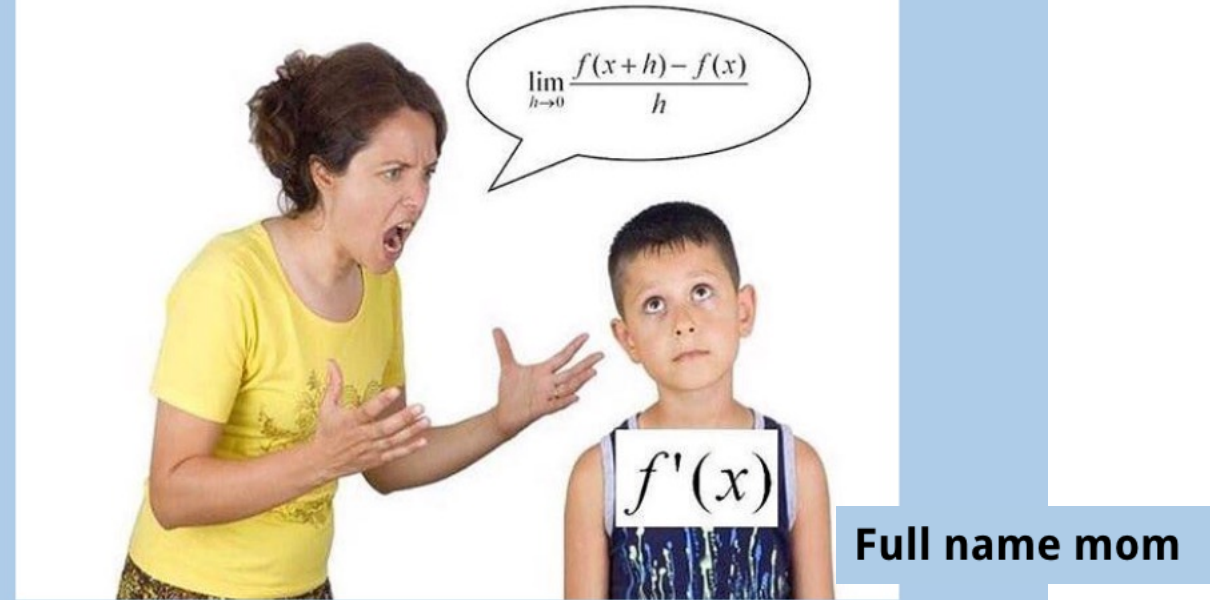
OTHER EXAMPLES



Classroom suggestion

OTHER EXAMPLES

When your mom calls you by your full name:



OTHER EXAMPLES



iPhone x



iPhone $y = x$



iPhone $y = x^2$



iPhone $y = x^3$



iPhone x



iPhone y



iPhone $y = x$



iPhone $y = x^2$



iPhone $y = x^3$



iPhone $y = e^x$



iPhone $y = \sin x$



iPhone-
 $(x-h)^2 + (y-k)^2 = r^2$



iPhone-
 $x^4 - y^4 = xy$

Possible activities for students

1. SEARCH
2. CREATION
3. DISCUSSION

ANALYSIS OF
PARTIAL
MEANINGS

DEEPENING OF THE
SPECIALIZED
MEANING

POSSIBLE
DIDACTIC USES

1. **Web search** for a meme on an assigned or free topic

Packing of partial meanings

Deepening of the mathematical meaning through video, written text, GeoGebra applet

- Systematization of knowledge
- Formative evaluation
- Metacognition
- Motivation
- Engagement


Creation of a meme on an assigned or free topic

Unpacking of partial meanings

Collective discussion of the mathematical meaning

3. **Class discussion** on memes found or created by classmates or teacher

Packing and unpacking of partial meanings



Meme as tools to systematize the knowledge already acquired by the class on a given topic, with particular attention to the following aspects:

COGNITIVE

- **strengthening of the mathematical discourse** and of the topic vocabulary
- **improvement of the ability to relate different representations** of a concept

NON-COGNITIVE

- **widening of the spectrum of student involvement** by leveraging on non-strictly educational skills;
- **openness to humour, creativity and emotions** in a subject traditionally distant from these elements;
- **updating of the teacher-student relationship**, thanks to the two-way exchange triggered by memes (the teacher learns about an artefact representative of youth culture while students learn maths);
- **engaging and motivating students**, using memes to connect with them in a different way.