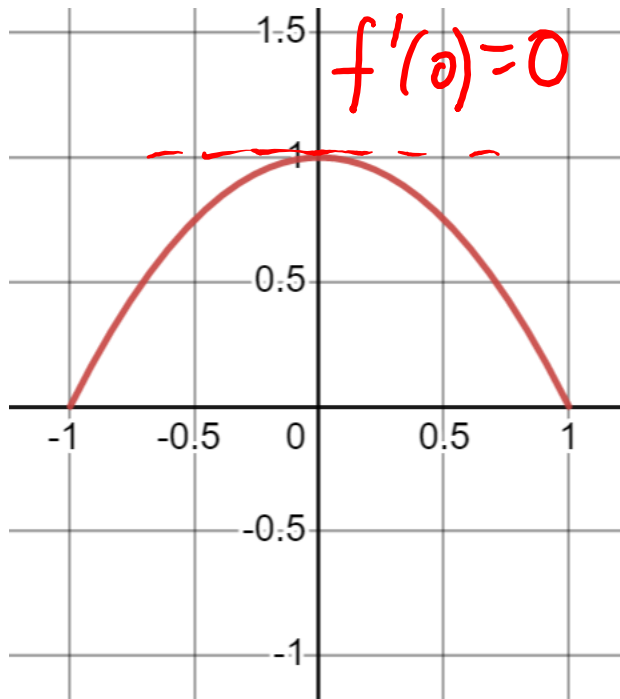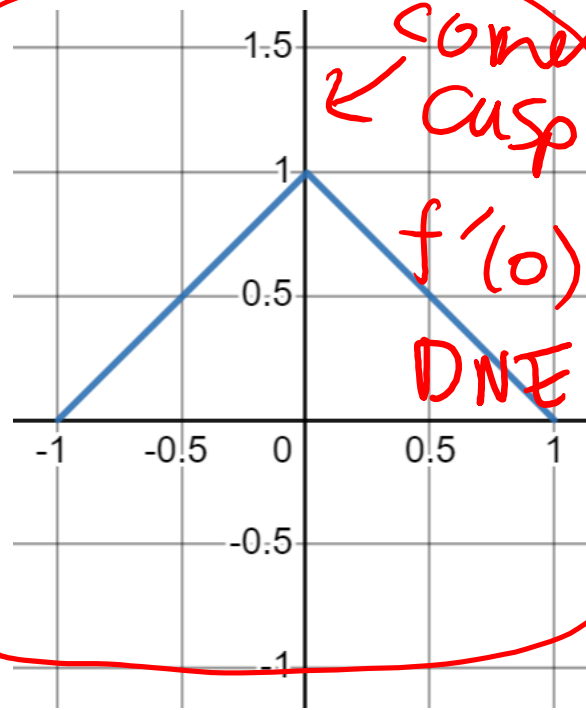# LESSON 21

MA 16100·FALL 2022

DR. HOOD

WARM UP

All the functions below go through the points $(-1, 0)$ and $(1, 0)$. Which function does **not** have a point x where $f'(x) = 0$?
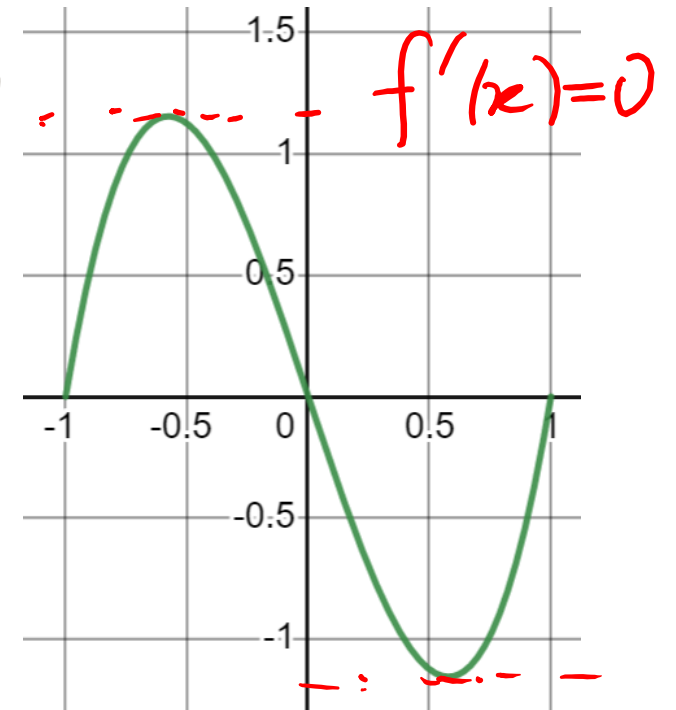
a)

$f'(0) = 0$

b)

corner / cusp

$f'(0)$ DNE

c)

$f'(x) = 0$

ANNOUNCEMENTS

- Dr. Hood's Office Hours in Math 844
  – Mon and Wed at 3:30-4:30pm
  – Friday at 2:30-3:30pm

- TA's Office Hours in the Math Resource Room
  – WTHR 313
  – Mon – Thu from 9:30am – 8:30pm
  – Fri from 9:30am – 3:30pm

MA 16290:

DATA SCIENCE LAB: CALCULUS

Will you be taking Calculus 2 in the Spring 2023? Are you interested in learning how to apply calculus to data science problems? If so, consider taking the one-credit course **MA16290: "Data Science Lab: Calculus."** In this course, you will

- learn to program in Python

- learn to use Arduino sensors and microprocessors to acquire data

- have the opportunity to earn honors credits for Calculus 2

More information here:

https://engineering.purdue.edu/~mboutin/Data_Science_labs.html

POLL 1

On the interval $[0,2]$, the function $y = x^2$ has an average rate of change of $v_{avg} = \frac{4-0}{2-0} = 2$.

Is there a point c such that:
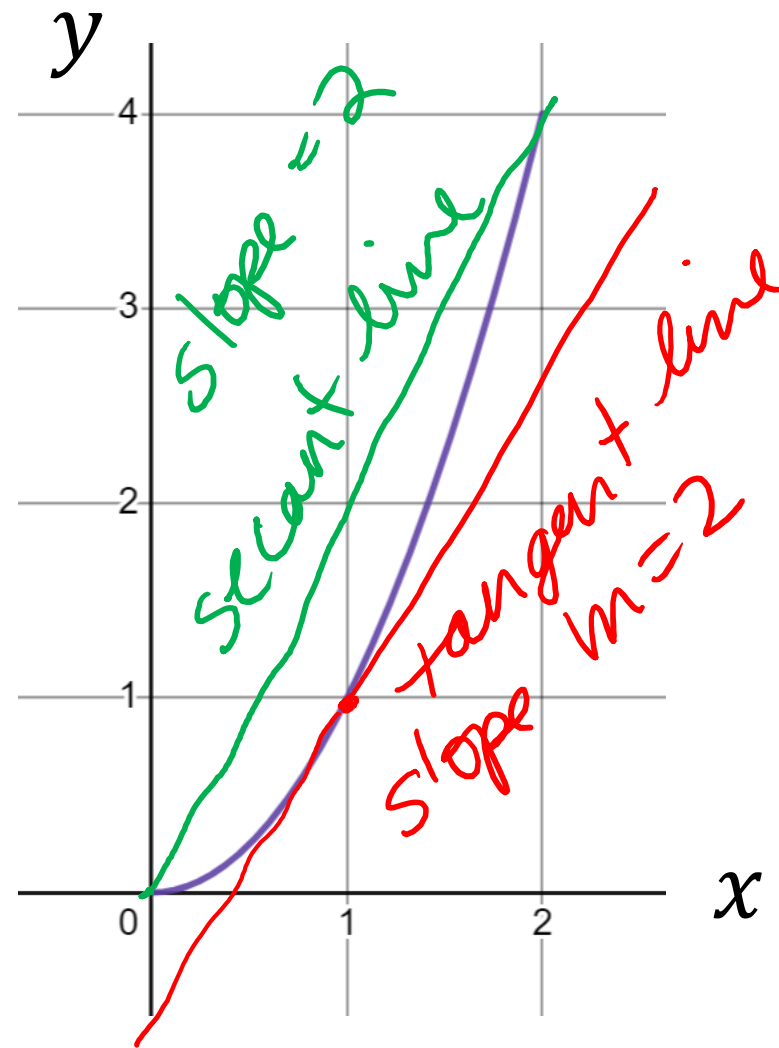
$0 < c < 2$ and $f'(c) = 2$?

a) Yes

b) No

$f'(x) = 2$

$2x = 2$

$\boxed{x = 1}$

slope = 2
secant line

tangent line
slope m = 2

tangent line parallel to secant line