



# LESSON 22

MA 16100 · FALL 2022

DR. HOOD



# WARM UP

$$f'(c) = 0 \quad \text{or} \quad \cancel{f'(c) \text{ DNE}}$$

Find the critical point(s) of the function

$$f(x) = xe^{-x}$$

$$\begin{aligned} f'(x) &= (1)e^{-x} + (x)(-e^{-x}) \\ &= (1-x)e^{-x} \end{aligned}$$

↑ deriv is defined  
on  $(-\infty, \infty)$

a)  $x = 0$

b)  $x = 1$

c)  $x = e$

d) There are no critical points

$$(1-x)e^{-x} = 0$$



$$1-x=0$$

$$\boxed{x=1}$$

or  $\cancel{e^{-x} \neq 0}$

# 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

# ANNOUNCEMENTS

- Last Drop Date
  - **Deadline:** Tuesday Oct 25 at 5pm
  - Last date to drop the class with a “W”
- GOAL: Release Exam 2 scores by 5pm Mon Oct 24
  - For most of the class (students who took the exam in person on Oct 18)

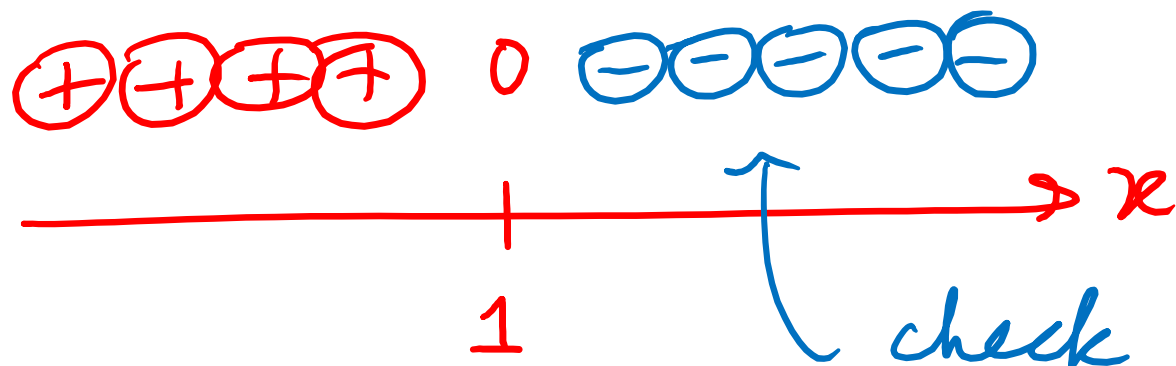
# POLL 1

Let  $f(x) = xe^{-x}$ . What is the sign of  $f'(x)$  on the interval  $(1, \infty)$ ?

a) positive

b) negative

$$f'(x) = (1-x)e^{-x}$$



check  $x=2$

$$f'(2) = (1-2)e^{-2} = -\frac{1}{e^2} \ominus$$

# POLL 2

On what interval is the graph concave up?

a)  $(0,2)$

b)  $(1,3)$

c)  $(-1,1)$

