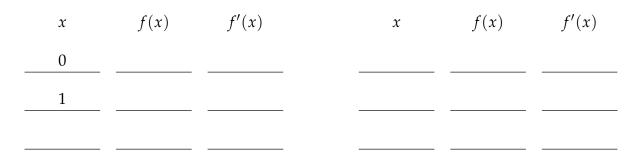
## Lecture Handout #12: Oct 11

Online mid-semester course assessment: https://tlt.stonybrook.edu/evaluate

## **Derivatives of Exponential Functions**

Slope of the tangent line to  $f(x) = e^x$  at different values of x:



Derivative of  $f(x) = e^x$ : f'(x) =

Derivative of  $f(x) = e^{2x}$ :  $f'(x) = ______$ 

Derivative of  $f(x) = e^{kx}$ :  $f'(x) = \underline{\hspace{1cm}}$ 

## **Derivatives of Logarithm Functions**

Slope of the tangent line to  $f(x) = \ln x$  at different values of x:

x	f'(x)	x	f'(x)	x	f'(x)
1					
2					

Formula for the derivative of  $f(x) = \ln x$ : f'(x) =

## **Applications**

Mouse population: P(t) =\_\_\_\_\_\_ (t in months)

$$P(12) =$$
\_\_\_\_\_\_  $P'(t) =$ \_\_\_\_\_\_  $P'(12) =$ \_\_\_\_\_\_

Tangent line to h(x) =\_\_\_\_\_ at a =\_\_\_\_\_

$$h(a) = \underline{\hspace{1cm}} h'(a) = \underline{\hspace{1cm}} y = \underline{\hspace{1cm}}$$