

**FAR  
BEYOND**

**MAT122**

**Exponential Derivatives  
other than base  $e$**



Stony Brook University

# Exponential Derivatives other than $e^x$

know

$$\frac{d}{dx} e^x = e^x$$

but what is  $\frac{d}{dx} a^x$ ?

$$\frac{d}{dx} a^x = a^x \ln a$$

ex. if  $f(x) = 2^x$

$$= 2^x \ln 2$$

note: if  $f(x) = e^x$

$$= e^x$$