MAT122

Exponential Derivatives
other than base e

Exponential Derivatives other than e^x

know $\quad \boxed{\dfrac{d}{dx}e^x = e^x}$ $\qquad$ but what is $\quad \dfrac{d}{dx}a^x$?

$$\boxed{\dfrac{d}{dx}a^x = a^x \ln a}$$

ex. if $f(x) = 2^x$ $\qquad\qquad = \boxed{2^x \ln 2}$

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

$\qquad\qquad\qquad\qquad\qquad = \boxed{e^x}$