

D[Exp[-a*x],x]



Derivative:

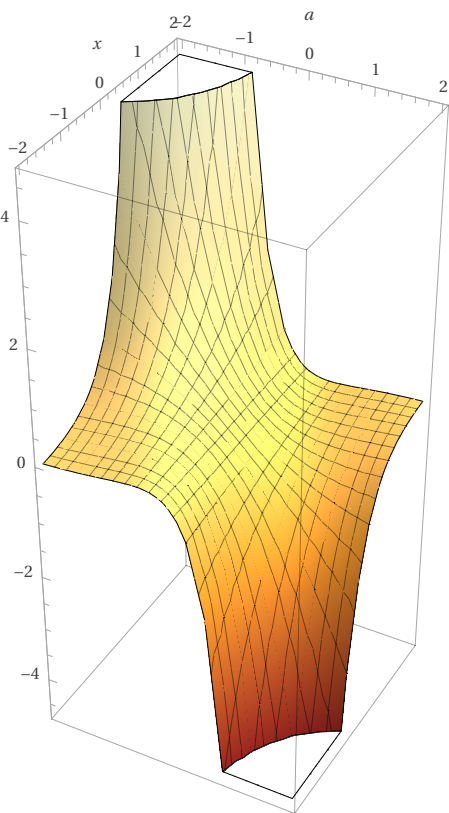
Approximate form

Step-by-step solution

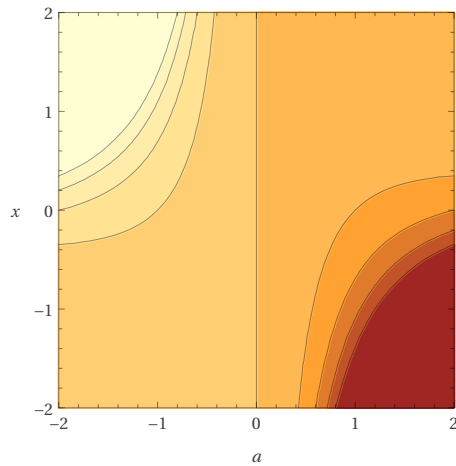
$$\frac{\partial}{\partial x}(\exp(-ax)) = -ae^{-ax}$$

3D plot:

Show contour lines



Contour plot:



Root:

$$a = 0$$

Property as a real function:

Domain:

\mathbb{R} (all real numbers)

\mathbb{R} is the set of real numbers »

Periodicity:

Approximate form

periodic in x with period $-\frac{2i\pi}{a}$

Series expansion at $x=0$:

$$-a + a^2 x - \frac{a^3 x^2}{2} + \frac{a^4 x^3}{6} - \frac{a^5 x^4}{24} + O(x^5)$$

(Taylor series)

Big-O notation »

Indefinite integral:

Approximate form

Step-by-step solution

$$\int -a e^{-ax} dx = e^{-ax} + \text{constant}$$