Section 11.02

Derivatives of Exponentials

Part 1: Derivatives of Exponentials

If $f(x) = e^x$, then $f'(x) = e^x$.

Example 1: Find the derivatives of the following:

a.) $y = 7e^x - 2x^4 + 5$

b.) $f(x) = 3x^2 e^x$

c.) $g(x) = \frac{e^x}{(3x^2-7)^5}$

If $f(x) = e^{u(x)}$, then $f'(x) = u'(x) \cdot e^{u(x)}$ (the chain rule)

Example 2: Find the derivatives of the following:

a.) $y = e^{7x^5}$

b.) $f(x) = 4x^2 e^{3x^7 - 2}$

c.) $z = \ln\left(e^{x^3}\right)$