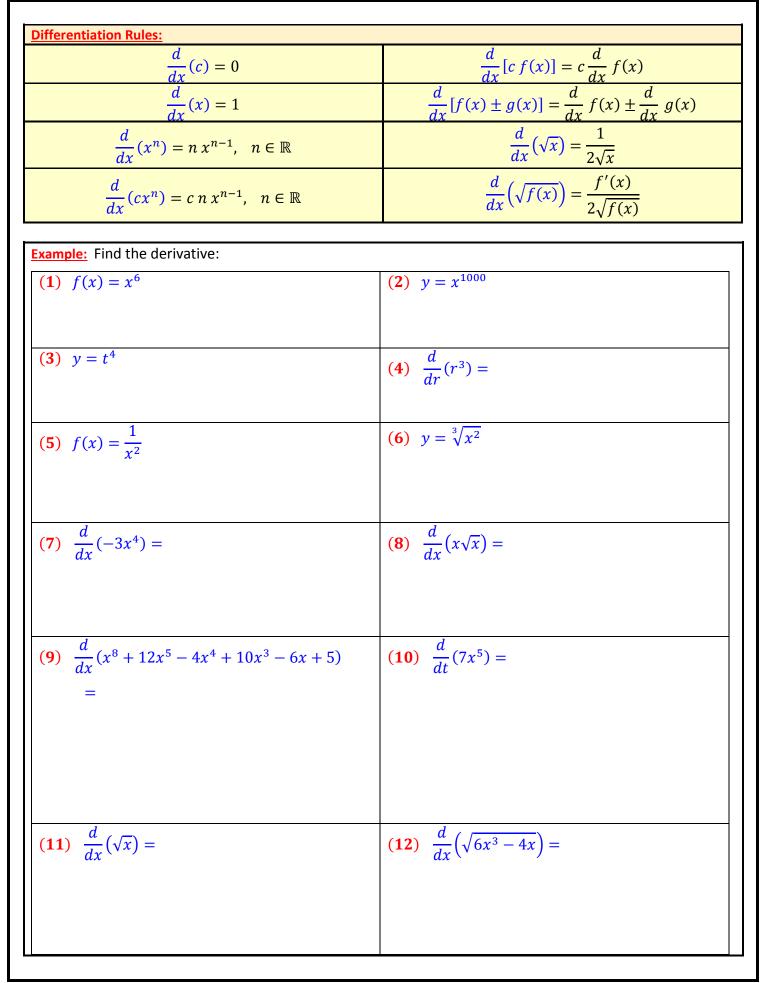
<u>Chapter 3</u> Differentiation Rules



Exponential Functions

Derivatives of Exponential Functions:	
$\frac{d}{dx}(a^x) = a^x. \ln a$	$\frac{d}{dx}(e^x) = e^x$
$\frac{d}{dx}(a^{f(x)}) = a^{f(x)}. f'(x) . \ln a$	$\frac{d}{dx}(e^{f(x)}) = e^{f(x)} \cdot f'(x)$
Example: Find the derivative:	
(1) $f(x) = e^x + 10$	(2) $y = e^{x^2 - 3x}$
(3) $f(x) = e^7$	(4) $y = 5^{6x^4}$

Example: If $f(x) = e^x - x$, find f', f'' and f'''.

Sections 3.1. Exercises

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Homework: Page 181 Differentiate the function.

9.
$$g(x) = x^2(1-2x)$$

15. $R(a) = (3a + 1)^2$

16.
$$h(t) = \sqrt[4]{t} - 4e^{t}$$

$$22. \quad y = \frac{\sqrt{x+x}}{x^2}$$