

**Week in Review # 6****Sections 3.1, 3.2, 3.3, 3.4, 3.5**

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**Things to know:**

- Be able to find derivatives using the derivative rules.
  - Be able to find the equation of the tangent line using the derivative rules.
  - Know the different notation for the derivative.
  - Know how to compute higher ordered derivatives.
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1. Find the derivatives for the following functions. Assume that a, b, and k are constants.

(a)  $y = \frac{3}{t^2} - 4t^6 + 5$

(b)  $u = 3aq^4 + q^{1.45} + b^3$

(c)  $f(x) = 6\sqrt[3]{x^4} + \frac{k}{2x^5}$

(d)  $y = \frac{5x^4 + 7x^2 - 2x + 3}{x}$

2. Find the equation of the tangent line for the function  $y = x^3e^{(x^2-4)} + 3x$  at  $x = 2$



7. Find the derivative for the following functions.

(a)  $f(x) = \sqrt[6]{x^3 + 7x^2 + 6}$

(b)  $h(t) = 3e^{3t^2+4} + 5^{4t-5}$

(c)  $y = (x^3 + 5x) \cos(x^4)$

(d)  $y = 2^{\sin(3x)} + \ln(x^4 + 7x^3 + 15)$

(e)  $g(x) = e^{-5x^2} \sqrt{x^8 + x - 6}$

(f)  $y = \frac{x^2 + 5}{x^4 - 2x - 1}$

$$(g) \ y = \left( \frac{x^4 + 7x + 1}{\cos(5x)} \right)^4$$

$$(h) \ g(a) = \ln(2a + e^{\sin(3a)})$$

$$(i) \ y = \ln\left(\frac{7x^2 + 5}{10 - x^5}\right)$$

$$(j) \ f(x) = \ln((x^4 + 5)^7 \cos(3x^2))$$

$$(k) \ y = 7^{(2-3x^2)} \ln(5 - 2x)$$