

Notes: Chain Rule (2)

Derivatives (1) Day 7

Find the derivative of each:

Example 1: $f(x) = \sqrt{x^2 + 1}$

Example 2:

A. $f(x) = \sin(x^2)$

B. $f(x) = \sin^2 x$

Example 3: $f(x) = (x^3 - 1)^{100}$

Example 4: $f(x) = \frac{1}{\sqrt{x^2+x+1}}$

Example 5: $f(x) = \left(\frac{x-2}{2x+1}\right)^9$

Example 6: $f(x) = (2x + 1)^5(x^3 - x + 1)^4$

Example 7: $f(x) = e^{\sin x}$

Example 8: Find the equation of the tangent line to the curve at the given point.

$$f(x) = x^2 e^{-x} \quad \left(1, \frac{1}{e}\right)$$