

SECTION 3.4: THE CHAIN RULE

The Chain Rule must be used to differentiate composite functions. If f and g are both differentiable and $F = f \circ g$ is the function $F(x) = f(g(x))$, then F is differentiable and $F' = f'(g(x))g'(x)$.

EXAMPLES: Find the derivative of the following functions.

1. $y = (x^2 + 5x)^7$

2. $y = \sin^3 x$

3. $g(x) = 2x(5x + 1)^{10}$

4. $F(x) = \sin(x^3)$

5. $h(x) = e^{\cos x}$

5. $K(x) = 2^{x^4}$