Calculus Section 2.4 The Chain Rule

Homework: Page 136 #’s 7, 9, 11, 13, 19, 23, 33, 43-49, 85, 93, 127, 128.

-Find the value of a composite function.  
-Find the derivative of a composite function using the chain rule.

A **composite function** is a function such that y = f(g(x)), where the function f(x) is dependent upon the value of the function g(x). (i.e. y = sin(4x), y = (x – 2)4, y = e5x)

The derivative of a composite function is found using the chain rule.

**The Chain Rule**If *y = f(u)* is a differentiable function of *u* and *u = g(x)* is a differentiable function of x, then *y = f(g(x))* is a differentiable function of x and



or, equivalently,



Remember this saying, “The derivative of the outside times the derivative of the inside.”  
  
Examples)  
1) Find for  2) Find  for 

3) Find g’(t) when  4) Find f’(x) for 

5) Find y’ for  6) Find y’ for 

7) Find y’ for  8) Find y’ for 

9) Given , find g’’(x).