

Section 3.4: The Chain Rule

- (1) In this section, we learn about the chain rule, which allows us to take the derivative of compositions of functions. Give several examples of functions which are compositions of other functions. Also give examples of functions which are not compositions, but are sums, products and quotients. Be sure to indicate which is which.

- (2) One of the hardest parts of using the chain rule is recognizing the elementary functions that are being used. Rewrite each function as a composition of basic functions:

(a) $\sin^3(x)$

(b) $4^{\sin(x)}$

(c) $\frac{1}{e^{3x} + 1}$, two different ways

(3) Write out the chain rule in symbols and in words.

(4) Explain how to use the chain rule to exponentiate $y = b^x$.

(5) Let $h(x) = f(g(x))$, what values of f' and g' do you need to know to find $h'(x)$? Give an example.

Extra Practice in Book: 3.4: Derivative Rules (1-50) until comfortable with all rules. 51, 55, 61, 63, 65, 67, 71, 72, 77