

## SECTION 3-6: THE CHAIN RULE

1. Recall Two Versions of the Chain Rule

2. Understanding what the “formulas” in the book are trying to communicate:

3. Find the derivatives for each function below:

(a)  $f(\theta) = 4 \tan(\theta/\pi)$ .

(b)  $g(t) = \sqrt[5]{\sin(7t)}$

(c)  $h(x) = \sin(x^2 - \frac{1}{x^2+x})$

4. (Some additional independent practice) Find the derivatives.

(a)  $f(x) = (\sec(3x) + \csc(2x))^5$

(b)  $g(x) = \frac{\cot(x^2+1)}{x^3+1}$

(c)  $h(x) = (2x - 1)^3(2x + 1)^5$

5. Find all  $x$ -values where the tangent to  $f(x) = (x^2 - 4)^3$  is horizontal.

6. Use the table below to evaluate the derivatives of the given functions at the indicated value.

$x$	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
-1	2	-1	0	1
0	1	2	3	4
1	-1	-2	-3	-4
2	0	4	-1	2

(a)  $h(x) = f(g(x))$  at  $a = 2$ .

(b)  $k(x) = f(x)g(x^2)$  at  $a = 1$