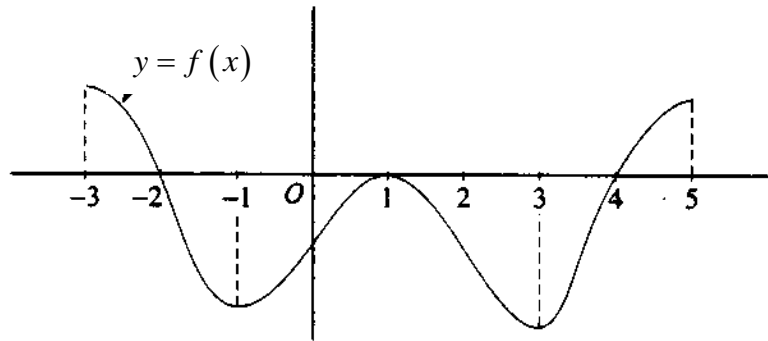


Unit 1 – Wkst 5 – Derivatives from Graphs and Tables



1. Using the graph above, answer the following:

What is the sign of  $f'(-2)$ ,  $f'(-1)$ ,  $f'(0)$ ,  $f'(1)$ ,  $f'(2)$ ,  $f'(3)$ , and  $f'(4)$

2. Suppose  $f$  and  $g$  are differentiable functions with the values shown in the table below. For each of the following functions  $h$ , find  $h'(2)$ .

$x$	$f(x)$	$g(x)$	$f'(x)$	$g'(x)$
2	3	4	5	-2

a)  $h(x) = f(x) + g(x)$

b)  $h(x) = f(x)g(x)$

c)  $h(x) = \frac{f(x)}{g(x)}$

3. Suppose  $f$  and  $g$  are differentiable functions with the values shown in the table below. For each of the following functions  $h$ , find  $h'(2)$ .

$x$	$f(x)$	$g(x)$	$f'(x)$	$g'(x)$
2	5	5	$e$	$\sqrt{2}$
5	2	8	$\pi$	7

a)  $h(x) = f(g(x))$

b)  $h(x) = g(f(x))$

c)  $h(x) = f(f(x))$

4. Suppose we are given the data in the table for the differentiable functions  $f$  and  $g$  and their derivatives.

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

a) Find  $h(4)$  if  $h(x) = f(g(x))$

b) Find  $h'(4)$  if  $h(x) = f(g(x))$

c) Find  $h(4)$  if  $h(x) = g(f(x))$

d) Find  $h'(4)$  if  $h(x) = g(f(x))$

e) Find  $h'(4)$  if  $h(x) = \frac{f(x)}{g(x)}$

f) Find  $h'(4)$  if  $h(x) = f(x)g(x)$

5. Using the information in #4, explain why there must be at least one value of  $x$  in the interval  $(1,4)$  such that  $g(x) = e$ .

6. Using the information in #4, explain why there must be at least one value of  $x$  in the interval  $(1,4)$  such that  $f(x) = \pi$ .