

Differentiation Rules, with Tables

Date _____ Period _____

For each problem, you are given a table containing some values of differentiable functions $f(x)$, $g(x)$ and their derivatives. Use the table data and the rules of differentiation to solve each problem.

1)

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

Given $h(x) = f(x) + g(x)$, find $h'(1)$

2)

| x | $f(x)$ | $f'(x)$ | $g(x)$ | $g'(x)$ |
|-----|--------|---------------|--------|---------|
| 1 | 2 | -1 | 1 | 1 |
| 2 | 1 | $\frac{1}{2}$ | 2 | 1 |
| 3 | 3 | 2 | 3 | 1 |

Given $h(x) = f(x) - g(x)$, find $h'(2)$

3)

| x | $f(x)$ | $f'(x)$ | $g(x)$ | $g'(x)$ |
|-----|--------|---------------|--------|---------|
| 1 | 2 | -1 | 1 | 2 |
| 2 | 1 | $\frac{1}{2}$ | 3 | 0 |
| 3 | 3 | 2 | 1 | -2 |

Given $h(x) = f(x) \cdot g(x)$, find $h'(3)$

4)

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

Given $h(x) = \frac{f(x)}{g(x)}$, find $h'(3)$

5)

| x | $f(x)$ | $f'(x)$ | $g(x)$ | $g'(x)$ |
|-----|--------|---------|--------|----------------|
| 1 | 5 | -1 | 1 | 2 |
| 2 | 4 | -1 | 3 | $\frac{3}{2}$ |
| 3 | 3 | -1 | 4 | 1 |
| 4 | 2 | -1 | 5 | 1 |
| 5 | 1 | 0 | 6 | $-\frac{1}{2}$ |
| 6 | 2 | 1 | 4 | -2 |

Part 1) Given $h_1(x) = f(x) + g(x)$, find $h_1'(2)$

Part 2) Given $h_2(x) = f(x) - g(x)$, find $h_2'(3)$

Part 3) Given $h_3(x) = f(x) \cdot g(x)$, find $h_3'(4)$

Part 4) Given $h_4(x) = \frac{f(x)}{g(x)}$, find $h_4'(2)$

Part 5) Given $h_5(x) = (f(x))^2$, find $h_5'(2)$

Part 6) Given $h_6(x) = f(g(x))$, find $h_6'(6)$