Name_____ ID: 1
Rules using Tables and Graphs

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	2	3	−2
2	4	0	1	0
3	2	$-\dfrac{3}{2}$	3	$\dfrac{3}{2}$
4	1	−1	4	1

Part 1) Given $h_1(x) = f(x) \cdot g(x)$, find $h_1{}'(3)$

Part 2) Given $h_2(x) = \dfrac{f(x)}{g(x)}$, find $h_2{}'(1)$

Part 3) Given $h_3(x) = (f(x))^2$, find $h_3{}'(3)$

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

2)

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	3	−1	4	−2
2	2	−1	2	$-\dfrac{3}{2}$
3	1	$\dfrac{1}{2}$	1	0
4	3	2	2	1

Part 1) Given $h_1(x) = f(x) \cdot g(x)$, find $h_1{}'(3)$

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

3)

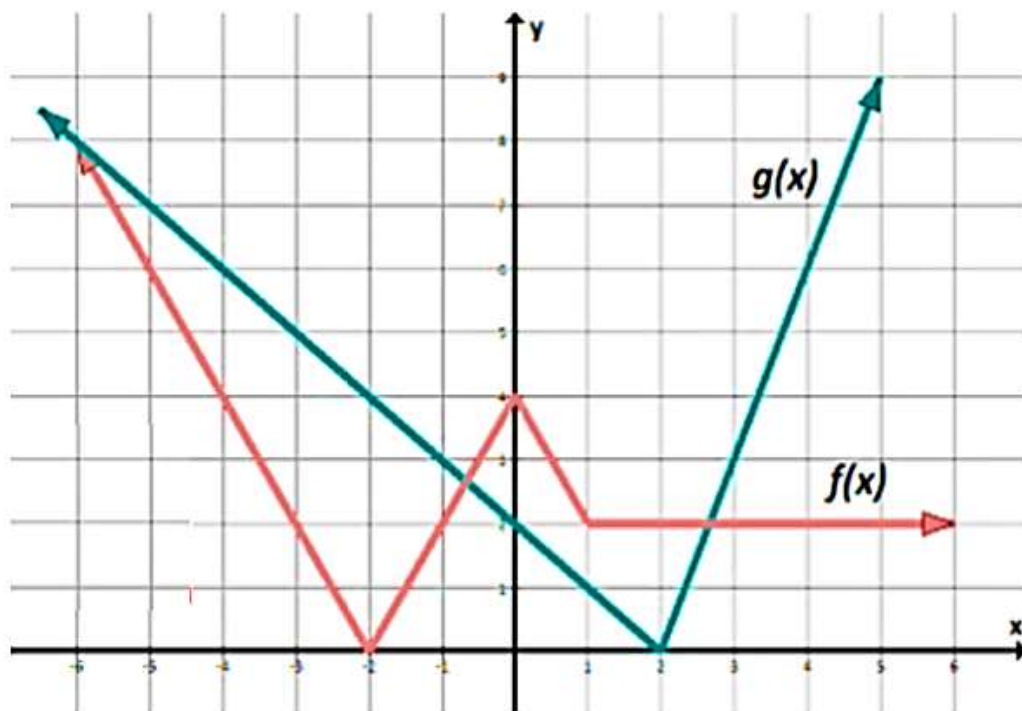| x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	3	−2	1	1
2	1	0	2	$\dfrac{3}{2}$
3	3	$\dfrac{3}{2}$	4	$\dfrac{1}{2}$
4	4	1	3	−1

Part 1) Given $h_1(x) = f(x) \cdot g(x)$, find $h_1{}'(4)$

Part 2) Given $h_2(x) = \dfrac{f(x)}{g(x)}$, find $h_2{}'(3)$

Part 3) Given $h_3(x) = (f(x))^2$, find $h_3{}'(1)$

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

Suppose $p(x) = f(g(x))$ and $q(x) = g(f(x))$.

Find each if they exist. If they do not exist, explain why.

1. $p'(4)$

2. $q'(-1)$

3. $p'(-3)$

4. $q'(4)$