Calculus - Derivative Rules using Tables Name_____ ID: 1

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	4	-1	3	-2
2	3	$-\frac{3}{2}$	1	$-\frac{1}{2}$
3	1	$-\frac{1}{2}$	2	$\frac{3}{2}$
4	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 $h_2'(3)$

2)

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

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 $h_2'(2)$

3)

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

Part 1) Given $h_1(x) = f(x) \cdot g(x)$, find $h_1'(4)$
Part 2) Given $h_2(x) = \frac{f(x)}{g(x)}$, find $h_2'(3)$

4)

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

Part 1) Given $h_1(x) = f(x) \cdot g(x)$, find $h_1'(3)$
Part 2) Given $h_2(x) = \frac{f(x)}{g(x)}$, find $h_2'(1)$

5)

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

Part 1) Given $h_1(x) = f(x) + g(x)$, find $h_1'(3)$
Part 2) Given $h_2(x) = f(x) - g(x)$, find $h_2'(2)$
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 $h_6'(3)$

6)

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

Part 1) Given $h_1(x) = f(x) + g(x)$, find $h_1'(3)$
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 $h_3'(3)$
Part 4) Given $h_4(x) = \frac{f(x)}{g(x)}$, find $h_4'(1)$
Part 5) Given $h_5(x) = (f(x))^2$, find $h_5'(1)$
Part 6) Given $h_6(x) = f(g(x))$, find $h_6'(3)$

7)

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	3	–1	1	2
2	2	–1	3	$\frac{3}{2}$
3	1	$\frac{1}{2}$	4	0
4	3	2	3	–1

Part 1) Given $h_1(x) = f(x) + g(x)$, find $h_1'(1)$
Part 2) Given $h_2(x) = f(x) - g(x)$, find $h_2'(1)$
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 $h_4'(3)$
Part 5) Given $h_5(x) = (f(x))^2$, find $h_5'(2)$
Part 6) Given $h_6(x) = f(g(x))$, find $h_6'(4)$

8)

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

Part 1) Given $h_1(x) = f(x) + g(x)$, find $h_1'(4)$
Part 2) Given $h_2(x) = f(x) - g(x)$, find $h_2'(1)$
Part 3) Given $h_3(x) = f(x) \cdot g(x)$, find $h_3'(2)$
Part 4) Given $h_4(x) = \frac{f(x)}{g(x)}$, find $h_4'(1)$
Part 5) Given $h_5(x) = (f(x))^2$, find $h_5'(1)$
Part 6) Given $h_6(x) = f(g(x))$, find $h_6'(2)$

Answers to (ID: 1)

1) $h_1'(2) = -2$
$h_2'(3) = -2$

2) $h_1'(2) = 0$
$h_2'(2) = -2$

3) $h_1'(4) = -6$
$h_2'(3) = 0$

4) $h_1'(3) = 0$
$h_2'(1) = \frac{1}{9}$

5) $h_1'(3) = \frac{3}{2}$
$h_2'(2) = -\frac{3}{2}$
$h_3'(4) = 11$
$h_4'(2) = -\frac{3}{2}$
$h_5'(2) = -9$
$h_6'(3) = 0$

6) $h_1'(3) = 0$
$h_2'(3) = -3$
$h_3'(3) = 0$
$h_4'(1) = \frac{10}{9}$
$h_5'(1) = 8$
$h_6'(3) = -\frac{9}{4}$

7) $h_1'(1) = 1$
$h_2'(1) = -3$
$h_3'(4) = 3$
$h_4'(3) = \frac{1}{8}$
$h_5'(2) = -4$
$h_6'(4) = -\frac{1}{2}$

8) $h_1'(4) = 0$
$h_2'(1) = 1$
$h_3'(2) = 4$
$h_4'(1) = 0$
$h_5'(1) = 8$
$h_6'(2) = 0$