Calculus Practice: Chain Rule 8a

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	3	–2	2	–1
2	1	0	1	0
3	3	2	2	1

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

A) $h_1'(3) = 12$, $h_2'(3) = 0$
B) $h_1'(3) = 13$, $h_2'(3) = 0$
C) $h_1'(3) = 13$, $h_2'(3) = -3$
D) $h_1'(3) = 10$, $h_2'(3) = 3$

2)

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

Part 1) Given $h_1(x) = (f(x))^2$, find $h_1'(1)$
Part 2) Given $h_2(x) = f(g(x))$, find $h_2'(1)$

A) $h_1'(1) = 2$, $h_2'(1) = 4$
B) $h_1'(1) = 3$, $h_2'(1) = 0$
C) $h_1'(1) = 2$, $h_2'(1) = 1$
D) $h_1'(1) = 4$, $h_2'(1) = 2$

3)

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

Part 1) Given $h_1(x) = (f(x))^2$, find $h_1'(2)$
Part 2) Given $h_2(x) = f(g(x))$, find $h_2'(2)$

A) $h_1'(2) = -3$, $h_2'(2) = \frac{7}{2}$
B) $h_1'(2) = 0$, $h_2'(2) = \frac{1}{2}$
C) $h_1'(2) = -2$, $h_2'(2) = -\frac{5}{2}$
D) $h_1'(2) = 1$, $h_2'(2) = \frac{3}{2}$

4)

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	1	1	2	1
2	2	1	3	0
3	3	1	2	–1

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

A) $h_1'(2) = 5$, $h_2'(3) = 0$
B) $h_1'(2) = 1$, $h_2'(3) = 2$
C) $h_1'(2) = 2$, $h_2'(3) = 2$
D) $h_1'(2) = 4$, $h_2'(3) = -1$

5)

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

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

A) $h_1'(3) = -2$, $h_2'(1) = 4$
B) $h_1'(3) = -4$, $h_2'(1) = 1$
C) $h_1'(3) = -6$, $h_2'(1) = 4$
D) $h_1'(3) = -1$, $h_2'(1) = -1$

6)

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

Part 1) Given $h_1(x) = (f(x))^2$, find $h_1'(2)$
Part 2) Given $h_2(x) = f(g(x))$, find $h_2'(2)$

A) $h_1'(2) = 0$, $h_2'(2) = -\frac{1}{2}$
B) $h_1'(2) = -3$, $h_2'(2) = \frac{1}{2}$
C) $h_1'(2) = -2$, $h_2'(2) = -\frac{5}{2}$
D) $h_1'(2) = -6$, $h_2'(2) = \frac{7}{2}$

7)

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	3	–1	2	–1
2	2	–1	1	0
3	1	–1	2	1

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

A) $h_1'(2) = -7$, $h_2'(3) = -4$
B) $h_1'(2) = -6$, $h_2'(3) = 1$
C) $h_1'(2) = -5$, $h_2'(3) = 0$
D) $h_1'(2) = -4$, $h_2'(3) = -1$

8)

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

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

A) $h_1'(3) = 11$, $h_2'(2) = -1$
B) $h_1'(3) = 12$, $h_2'(2) = 0$
C) $h_1'(3) = 15$, $h_2'(2) = 2$
D) $h_1'(3) = 14$, $h_2'(2) = 3$

9)

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

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

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2)

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

Part 1) Given $h_1(x) = (f(x))^2$, find $h_1'(1)$
Part 2) Given $h_2(x) = f(g(x))$, find $h_2'(1)$

A) $h_1'(1) = 2$, $h_2'(1) = 4$
B) $h_1'(1) = 3$, $h_2'(1) = 0$
C) $h_1'(1) = 2$, $h_2'(1) = 1$
*D) $h_1'(1) = 4$, $h_2'(1) = 2$

3)

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

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4)

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	1	1	2	1
2	2	1	3	0
3	3	1	2	–1

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

A) $h_1'(2) = 5$, $h_2'(3) = 0$
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C) $h_1'(2) = 2$, $h_2'(3) = 2$
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x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
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3	2	−1	1	−1

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6)

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

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