Calculus Practice: Differentiating Products and Quotients of Functions 5a

For each problem, you are given a table with 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	1	2	2	–1
2	3	$\frac{1}{2}$	1	0
3	2	–1	2	1

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

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

A) $h_1'(1) = 3$ $h_2'(2) = \frac{1}{2}$

B) $h_1'(1) = 5$ $h_2'(2) = \frac{1}{2}$

C) $h_1'(1) = 5$ $h_2'(2) = -\frac{3}{2}$

D) $h_1'(1) = 1$ $h_2'(2) = -\frac{5}{2}$

2)

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

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

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

A) $h_1'(2) = -\frac{1}{2}$ $h_2'(1) = -\frac{7}{4}$

B) $h_1'(2) = -\frac{7}{2}$ $h_2'(1) = \frac{1}{4}$

C) $h_1'(2) = -\frac{7}{2}$ $h_2'(1) = -\frac{3}{4}$

D) $h_1'(2) = -\frac{1}{2}$ $h_2'(1) = \frac{1}{4}$

3)

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 $h_1(x) = f(x) \cdot g(x)$, find $h_1'(3)$

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

A) $h_1'(3) = -5$ $h_2'(2) = \frac{3}{2}$

B) $h_1'(3) = -3$ $h_2'(2) = \frac{3}{2}$

C) $h_1'(3) = -3$ $h_2'(2) = \frac{1}{2}$

D) $h_1'(3) = -6$ $h_2'(2) = \frac{1}{2}$

4)

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	2	–1	1	1
2	1	0	2	1
3	2	1	3	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 $h_2'(2)$

A) $h_1'(3) = 4$ $h_2'(2) = -\frac{9}{4}$

B) $h_1'(3) = 6$ $h_2'(2) = -\frac{5}{4}$

C) $h_1'(3) = 5$ $h_2'(2) = -\frac{1}{4}$

D) $h_1'(3) = 6$ $h_2'(2) = \frac{7}{4}$

5)

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 $h_1(x) = f(x) \cdot g(x)$, find $h_1'(1)$

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A) $h_1'(1) = 3$ $h_2'(2) = \frac{1}{3}$

B) $h_1'(1) = 1$ $h_2'(2) = -\frac{2}{3}$

C) $h_1'(1) = 4$ $h_2'(2) = -\frac{8}{3}$

D) $h_1'(1) = 2$ $h_2'(2) = -\frac{5}{3}$

6)

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 $h_1(x) = f(x) \cdot g(x)$, find $h_1'(2)$

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

A) $h_1'(2) = -\frac{3}{2}$ $h_2'(1) = \frac{16}{9}$

B) $h_1'(2) = -\frac{7}{2}$ $h_2'(1) = -\frac{2}{9}$

C) $h_1'(2) = \frac{3}{2}$ $h_2'(1) = -\frac{2}{9}$

D) $h_1'(2) = -\frac{3}{2}$ $h_2'(1) = \frac{7}{9}$

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A) $h_1'(2) = 0$ $h_2'(2) = \frac{7}{4}$

B) $h_1'(2) = 0$ $h_2'(2) = -\frac{1}{4}$

C) $h_1'(2) = -6$ $h_2'(2) = \frac{15}{4}$

D) $h_1'(2) = -3$ $h_2'(2) = \frac{3}{4}$

8)

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	1	1	2	−1
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Part 1) Given $h_1(x) = f(x) \cdot g(x)$, find $h_1'(2)$

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

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

B) $h_1'(2) = 1$ $h_2'(2) = 1$

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

D) $h_1'(2) = 3$ $h_2'(2) = 4$

9)

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

A) $h_1'(1) = 1$ $h_2'(3) = -\frac{25}{9}$

B) $h_1'(1) = 6$ $h_2'(3) = \frac{2}{9}$

C) $h_1'(1) = 4$ $h_2'(3) = -\frac{7}{9}$

D) $h_1'(1) = 6$ $h_2'(3) = -\frac{16}{9}$

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

D) $h_1'(2) = 3$ $h_2'(2) = 4$

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