

Calculus Practice: Differentiating Products and Quotients of Functions 5b

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 | 3 | -1 | 2 | 1 |
| 2 | 2 | -1 | 3 | 0 |
| 3 | 1 | -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 $h_2'(3)$

2)

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

3)

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

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 $h_2'(1)$

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

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 | 2 | -1 | 1 | 2 |
| 2 | 1 | 0 | 3 | $\frac{1}{2}$ |
| 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 $h_2'(3)$

6)

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

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

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

8)

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

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

9)

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

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

10)

| x | $f(x)$ | $f'(x)$ | $g(x)$ | $g'(x)$ |
|-----|--------|---------|--------|----------------|
| 1 | 1 | 1 | 2 | 1 |
| 2 | 2 | 1 | 3 | $-\frac{1}{2}$ |
| 3 | 3 | 1 | 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 $h_2'(3)$

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|-----|--------|---------|--------|---------|
| 1 | 3 | -1 | 2 | 1 |
| 2 | 2 | -1 | 3 | 0 |
| 3 | 1 | -1 | 2 | -1 |

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

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

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 $h_2'(3)$

2)

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

$$h_1'(1) = -5$$

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

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 $h_2'(2)$

3)

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

$$h_1'(3) = 7$$

$$h_2'(1) = \frac{1}{9}$$

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 $h_2'(1)$

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 |

$$h_1'(2) = 3$$

$$h_2'(1) = \frac{1}{4}$$

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 $h_2'(1)$

5)

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

$$h_1'(1) = 3$$

$$h_2'(3) = 1$$

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 $h_2'(3)$

6)

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

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

$$h_2'(1) = \frac{5}{9}$$

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 |

$$h_1'(1) = -5$$

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

8)

| 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 |

$$h_1'(1) = 5$$

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

9)

| 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 |

$$h_1'(1) = 5$$

$$h_2'(3) = 0$$

10)

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

$$h_1'(2) = 2$$

$$h_2'(3) = 7$$

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 $h_2'(1)$

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