

1. Suppose we are given the following data concerning the functions f and g :

$$f$$

| x | y | y' |
|-----|-----|------|
| 1 | 2 | 3 |
| 2 | 3 | 5 |
| 3 | 1 | -2 |

$$g$$

| x | y | y' |
|-----|-----|------|
| 1 | 1 | -2 |
| 2 | 3 | 0 |
| 3 | 2 | -1 |

Fill in the following tables:

$$f \circ g$$

| x | y | y' |
|-----|-----|------|
| 1 | | |
| 2 | | |
| 3 | | |

$$g \circ f$$

| x | y | y' |
|-----|-----|------|
| 1 | | |
| 2 | | |
| 3 | | |

$$fg$$

| x | y | y' |
|-----|-----|------|
| 1 | | |
| 2 | | |
| 3 | | |

$$f/g$$

| x | y | y' |
|-----|-----|------|
| 1 | | |
| 2 | | |
| 3 | | |

2. Suppose f is a function defined on $(0,1)$ with the following properties:

$f(x) > 0, f'(x) < 0$ for all $x \in (0,1)$. Determine whether the following are positive or negative.

$$\frac{d}{dx}[f(x^2)]$$

$$\frac{d}{dx}\left[\frac{1}{f(x)}\right]$$

$$\frac{d}{dx}[f^2(x)]$$

$$\frac{d}{dx}[\sqrt{f(x)}]$$