

1. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(4) &= 6, & f(-3) &= -1, & f(6) &= -3, & f(-1) &= 4 \\ f'(4) &= 4, & f'(-3) &= 1, & f'(6) &= -3, & f'(-1) &= -8 \end{aligned}$$

Find $g'(4)$.

Solution:

$$g'(4) = \frac{1}{f'(g(4))} = \frac{1}{f'(-1)} = \frac{1}{-8}$$

2. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(8) &= 10, & f(10) &= 8, & f(-7) &= -1, & f(-1) &= -7 \\ f'(8) &= 5, & f'(10) &= 7, & f'(-7) &= 6, & f'(-1) &= 10 \end{aligned}$$

Find $g'(10)$.

Solution:

$$g'(10) = \frac{1}{f'(g(10))} = \frac{1}{f'(8)} = \frac{1}{5}$$

3. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(5) &= -8, & f(2) &= 5, & f(-8) &= 3, & f(3) &= 2 \\ f'(5) &= -9, & f'(2) &= 3, & f'(-8) &= 5, & f'(3) &= -7 \end{aligned}$$

Find $g'(3)$.

Solution:

$$g'(3) = \frac{1}{f'(g(3))} = \frac{1}{f'(-8)} = \frac{1}{5}$$

4. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(-6) &= 7, & f(6) &= 3, & f(3) &= -6, & f(7) &= 6 \\ f'(-6) &= 5, & f'(6) &= -10, & f'(3) &= 7, & f'(7) &= -5 \end{aligned}$$

Find $g'(3)$.

Solution:

$$g'(3) = \frac{1}{f'(g(3))} = \frac{1}{f'(6)} = \frac{1}{-10}$$

5. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(3) &= 6, & f(6) &= -4, & f(-4) &= 4, & f(4) &= 3 \\ f'(3) &= -9, & f'(6) &= 10, & f'(-4) &= -6, & f'(4) &= -3 \end{aligned}$$

Find $g'(3)$.

Solution:

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

6. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(-2) &= -8, & f(-8) &= -1, & f(-5) &= -2, & f(-1) &= -5 \\ f'(-2) &= 1, & f'(-8) &= 3, & f'(-5) &= 4, & f'(-1) &= -5 \end{aligned}$$

Find $g'(-8)$.

Solution:

$$g'(-8) = \frac{1}{f'(g(-8))} = \frac{1}{f'(-2)} = \frac{1}{1}$$

7. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(-2) &= -5, & f(-5) &= -8, & f(-8) &= 3, & f(3) &= -2 \\ f'(-2) &= 8, & f'(-5) &= 3, & f'(-8) &= 6, & f'(3) &= 4 \end{aligned}$$

Find $g'(-2)$.

Solution:

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

8. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(10) &= -8, & f(7) &= -4, & f(-4) &= 10, & f(-8) &= 7 \\ f'(10) &= -2, & f'(7) &= 0, & f'(-4) &= 5, & f'(-8) &= 9 \end{aligned}$$

Find $g'(10)$.

Solution:

$$g'(10) = \frac{1}{f'(g(10))} = \frac{1}{f'(-4)} = \frac{1}{5}$$

9. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(-4) &= -5, & f(-5) &= 0, & f(0) &= -7, & f(-7) &= -4 \\ f'(-4) &= 9, & f'(-5) &= 4, & f'(0) &= -10, & f'(-7) &= 10 \end{aligned}$$

Find $g'(-5)$.

Solution:

$$g'(-5) = \frac{1}{f'(g(-5))} = \frac{1}{f'(-4)} = \frac{1}{9}$$

10. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(-1) &= 5, & f(5) &= -6, & f(-6) &= 4, & f(4) &= -1 \\ f'(-1) &= 5, & f'(5) &= 8, & f'(-6) &= -10, & f'(4) &= 3 \end{aligned}$$

Find $g'(4)$.

Solution:

$$g'(4) = \frac{1}{f'(g(4))} = \frac{1}{f'(-6)} = \frac{1}{-10}$$

11. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(10) &= -5, & f(4) &= -6, & f(-6) &= 10, & f(-5) &= 4 \\ f'(10) &= -1, & f'(4) &= 1, & f'(-6) &= -8, & f'(-5) &= 10 \end{aligned}$$

Find $g'(-5)$.

Solution:

$$g'(-5) = \frac{1}{f'(g(-5))} = \frac{1}{f'(10)} = \frac{1}{-1}$$

12. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(0) &= 1, & f(1) &= 0, & f(-3) &= -4, & f(-4) &= -3 \\ f'(0) &= -8, & f'(1) &= 4, & f'(-3) &= -5, & f'(-4) &= -10 \end{aligned}$$

Find $g'(-4)$.

Solution:

$$g'(-4) = \frac{1}{f'(g(-4))} = \frac{1}{f'(-3)} = \frac{1}{-5}$$

13. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(6) &= 8, & f(4) &= -8, & f(8) &= 4, & f(-8) &= 6 \\ f'(6) &= 0, & f'(4) &= 10, & f'(8) &= -5, & f'(-8) &= -10 \end{aligned}$$

Find $g'(6)$.

Solution:

$$g'(6) = \frac{1}{f'(g(6))} = \frac{1}{f'(-8)} = \frac{1}{-10}$$

14. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(5) &= -4, & f(-4) &= -2, & f(-2) &= -6, & f(-6) &= 5 \\ f'(5) &= 3, & f'(-4) &= 10, & f'(-2) &= -10, & f'(-6) &= 6 \end{aligned}$$

Find $g'(-6)$.

Solution:

$$g'(-6) = \frac{1}{f'(g(-6))} = \frac{1}{f'(-2)} = \frac{1}{-10}$$

15. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(5) &= -5, & f(3) &= -7, & f(-7) &= 3, & f(-5) &= 5 \\ f'(5) &= 1, & f'(3) &= -7, & f'(-7) &= -3, & f'(-5) &= -10 \end{aligned}$$

Find $g'(3)$.

Solution:

$$g'(3) = \frac{1}{f'(g(3))} = \frac{1}{f'(-7)} = \frac{1}{-3}$$

16. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(-8) &= 1, & f(3) &= 10, & f(1) &= 3, & f(10) &= -8 \\ f'(-8) &= 5, & f'(3) &= -9, & f'(1) &= -10, & f'(10) &= 10 \end{aligned}$$

Find $g'(10)$.

Solution:

$$g'(10) = \frac{1}{f'(g(10))} = \frac{1}{f'(3)} = \frac{1}{-9}$$

17. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(1) &= -6, & f(-8) &= -7, & f(-7) &= -8, & f(-6) &= 1 \\ f'(1) &= 1, & f'(-8) &= 0, & f'(-7) &= 5, & f'(-6) &= 10 \end{aligned}$$

Find $g'(-8)$.

Solution:

$$g'(-8) = \frac{1}{f'(g(-8))} = \frac{1}{f'(-7)} = \frac{1}{5}$$

18. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(-8) &= 8, & f(3) &= -8, & f(8) &= -6, & f(-6) &= 3 \\ f'(-8) &= 2, & f'(3) &= 3, & f'(8) &= 5, & f'(-6) &= 4 \end{aligned}$$

Find $g'(-8)$.

Solution:

$$g'(-8) = \frac{1}{f'(g(-8))} = \frac{1}{f'(3)} = \frac{1}{3}$$

19. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(3) &= -2, & f(5) &= 10, & f(-2) &= 5, & f(10) &= 3 \\ f'(3) &= -4, & f'(5) &= -5, & f'(-2) &= 5, & f'(10) &= 6 \end{aligned}$$

Find $g'(-2)$.

Solution:

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

20. Suppose f and g are differentiable functions where $g(x) = f^{-1}(x)$ for all x . Suppose further that

$$\begin{aligned} f(-3) &= 9, & f(9) &= -10, & f(-10) &= -5, & f(-5) &= -3 \\ f'(-3) &= 10, & f'(9) &= -10, & f'(-10) &= 6, & f'(-5) &= -7 \end{aligned}$$

Find $g'(-5)$.

Solution:

$$g'(-5) = \frac{1}{f'(g(-5))} = \frac{1}{f'(-10)} = \frac{1}{6}$$