1. If $f(x) = x^5 + x^3 + 2x - 2$, find $(f^{-1})'(2)$

2. If $f(x) = \dfrac{1}{2}x^3 + \dfrac{1}{2}$, find $(f^{-1})'(0)$.

3. If $f(x) = \dfrac{1}{4}x^3 + x - 1$, find $(f^{-1})'(3)$

4. If $f(x) = x^3 - 3x^2 + 8x + 5$ and $g(x) = f^{-1}(x)$, find $g'(5)$

5. If $f(x) = 2x^3 - 3x$, $(x \geq 0)$, and h(x) is the inverse function of f(x), find $h'(-1)$.

6. Given $f(3) = 15$, $f'(3) = -8$, $f(6) = 3$, and $f'(6) = -2$. If f and g are inverses, find g'(3).

7. Let $g(t) = 5t^2 - 10t + 4$ for $t \geq 1$. Find the value of $(g^{-1})'(4)$.

8. Given $g(x) = \sin x$ on $\left[-\dfrac{\pi}{2}, \dfrac{\pi}{2}\right]$. If f and g are inverses, find $f'\left(-\dfrac{1}{2}\right)$

9.

Selected values of a strictly monotonic function $g(x)$ and its derivative $g'(x)$ are shown on the table below.

x	−3	−1	1	4
g(x)	5	1	0	−3
g'(x)	−4	$-\dfrac{1}{5}$	$-\dfrac{1}{6}$	−2

a) Find $(g^{-1})'(1)$

b) Find $(g^{-1})'(-3)$

10.

Selected values of a strictly monotonic function $h(x)$ and its derivative $h'(x)$ are shown on the table below.

x	−1	0	2	4
h(x)	−5	−1	4	7
h'(x)	3	$\dfrac{1}{2}$	$\dfrac{1}{6}$	5

Let $f(x)$ be a function such that $f(x) = h^{-1}(x)$.
a) Find $f'(-1)$
b) Find $f'(4)$

Answers

1	1/10
2	2/3
3	1/4
4	1/8
5	1/3
6	-1/2
7	1/10
8	$2/\sqrt{3}$
9a	-5
9b	-1/2
10a	2
10b	6