

Worksheet 22 - Average Rate, Value, Derivative of Inverse

Period _____

For each problem, find $(f^{-1})'(a)$

1) $f(x) = \sqrt{x+4}$, $a = 3$

2) $f(x) = -5x + 2$, $a = -2$

3) $f(x) = -4x^3 - 2$, $a = -6$

4) $f(x) = x^5 + 3x + 3$, $a = 7$

Differentiate each function with respect to the given variable.

5) $f(t) = \sin^{-1} 2t^4$

6) $r = \cos^{-1} 3x^5$

7) $h(w) = \tan^{-1} -w^3$

8) $h(x) = \sin^{-1} -5x^4$

For each problem, you are given a table containing 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.

9)

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	4	-1	5	-1
2	3	-1	4	$-\frac{3}{2}$
3	2	-1	2	$-\frac{3}{2}$
4	1	$\frac{1}{2}$	1	$\frac{1}{2}$
5	3	2	3	2

Given $h(x) = (f(x))^2$, find $h'(1)$

10) Suppose that g has an inverse h . Find $h'(2)$

11) Suppose that g has an inverse h . Find $h'(5)$

For each problem, find the average rate of change of the function and the average value of the function over the interval.

12) $h(w) = w^2 - 1$; $[0, 1]$

13) $y = \frac{1}{r+1}$; $[0, 1]$

14) $f(r) = 2r^2 + r - 1$; $[-1, 1]$

15) $f = -\frac{1}{r+3}$; $[-2, -1]$