

**AP CALCULUS AB**  
**Supplement 2.8**  
**Derivatives of Inverse Functions**

Name \_\_\_\_\_  
Date \_\_\_\_\_  
Period \_\_\_\_\_

Use the table below to find the derivative of each function at the given  $x$ -value.

$x$	-3	-2	-1	0	1	2	3
$f(x)$	4	3	2	0	-1	-3	-5
$g(x)$	0	1	2	1	0	-1	-2
$f'(x)$	0	4	3	1	-3	5	2
$g'(x)$	2	1	-3	5	0	7	-2

1.  $y = f^{-1}(x), x = -3$

2.  $y = g^{-1}(x), x = -1$

3.  $y = f^{-1}(g(x)), x = 2$

4.  $y = g^{-1}(f^{-1}(x)), x = 3$

Find  $(f^{-1})'(a)$  for the function  $f$  and value  $a$ .

5.  $f(x) = 2x^5 + x^3 + 1, a = 4$

6.  $f(x) = \sqrt{x-4}, a = 2$

7.  $f(x) = \frac{x}{x+1}, a = 6$

8.  $f(x) = \cos x$  for  $0 \leq x < \pi, a = 1$

### **Supplement 2.8 Answers**

1.  $y'(-3) = 1/5$

2.  $y'(-1) = 1/7$

3.  $y'(2) = -7/3$

4.  $y'(3) = -1/8$

5.  $(f^{-1})'(4) = 1/13$

6.  $(f^{-1})'(2) = 4$

7.  $(f^{-1})'(6) = 1/25$

8.  $(f^{-1})'(1)$  undefined