AP Calculus AB Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Find the derivative of *f* −1 for each of the following functions using implicit differentiation:**

* 1. *f* (*x*) = 5*x*3 + *x* −7

* 1. *f* (*x*) = 2*x*5 + *x*3 +1

* 1. *f* (*x*) = 5*x* − sin(2*x*)

1. **Evaluating the Derivatives of Inverse Functions**

* 1. Find the derivative of the inverse of *f* (*x*) = *x*3 + 7*x* + 2 at the point where *f* −1(10) = 1.

* 1. Let *f* be the function defined by *f* (*x*) = *x*3 + *x*. If *g*(*x*) = *f* −1(*x*) and *g*(2) = 1, what is the value of *g* ' (2) ?

* 1. Let *f* be the function defined by *f* (*x*) = *x*3 + 8*x* + cos(3*x*) . If *g*(*x*) = *f* −1(*x*) and g(1) = 0 , find the value of *g*'(1) .

* 1. If *f* (*x*) = *x*5 + 3*x* + 2 and *g*(*x*) = *f* −1(*x*) , find *g*’(2) .

* 1. Find if *f* (*x*) = 3*x* − cos *x*.

* 1. Find if *f* (*x*) = *x*3 + 2*x* + 5 .
  2. If g(7) = 3 and g’(3) = 5/6 and g’(7) = ¾, then
  3. A function and its derivative take on the values shown in the table. If is the inverse of , find

|  |  |  |
| --- | --- | --- |
| x |  |  |
| 2 | 6 | 1/3 |
| 6 | 8 | 3/2 |