DATE:_____

Derivatives of Inverse Functions

Recall: Finding the Inverse of a Function

Example: $f(x) = x^3$

① switch x & y

② solve for y

③ write with $f^{-1}(x)$ notation

Example: Find $(f^{-1})'(8)$where $f(x) = x^3$.

Derivative of Inverse Functions

Find $(f^{-1})'(8)$ where $f(x) = x^3$

① get x & y-values for $f(x)$ and $f^{-1}(x)$

② find $f'(x)$ at f's x-value

③ find $(f^{-1})'(x)$ at f^{-1}'s x-value

Example 1:

Given $f(x) = \frac{1}{4}x^3 + x - 1$ and $g(x)$ is the inverse of $f(x)$, find $g'(3)$.

Example 2:

Given $f(x) = x^2 + 3x - 1$ for $x \geq -1$, find $(f^{-1})'(3)$.

Example 3:

The table below gives values of a function f and its derivative f'.
If f has the inverse function f^{-1}, find $(f^{-1})'(2)$.

x	$f(x)$	$f'(x)$
-1	2	-6
1	-1	-4
2	-3	-7
8	-5	-1