Group Memebers: _____ _____

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Classwork 6 – Inverse Functions

1. Define one-to-one function.

2. Is $f(x) = x^2 - 3x + 2$ one-to-one?

3. Is $f(x) = (x-2)^{3/2} + 1$ one-to-one?

4. Is $f(x) = (x-2)^{2/3} + 1$ one-to-one?

If a function is one-to-one, then it has an inverse. (Remember, domain of f equals the range of f^{-1})

5. Determine if $f(x) = 4x^5 + 1$ is one-to-one and if so, find $f^{-1}(x)$.

6. Determine if $f(x) = x^{9/7}$ is one-to-one and if so, find $f^{-1}(x)$.

Derivative of Inverse: $(f^{-1})'(x) = \dfrac{1}{f'(f^{-1}(x))}$

7. Suppose f has an inverse and $f(2)=5$. $f'(2)=3/7$. Find $(f^{-1})'(5)$

8. $f(x) = x^3 + 2$, $f(3) = 29$, find $(f^{-1})'(29)$

9. $f(x)$ passes through the points (3 , -2) and (-2 , 5). The slope of the tangent line to the graph of $f(x)$ at $x = -2$ is -1/4. Evaluate the derivative of the inverse of f at 5.

10. Suppose that f has an inverse and $f(-20) = -2$, $f'(-20) = 4/3$. If $g = \dfrac{1}{f^{-1}}$, what is $g'(-2)$? Hint: use the reciprocal rule to find g' first.