

NAME: _____

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ASSIGNMENT: Finding Derivatives with the Chain Rule

DIRECTIONS: When functions are embedded within one another, we need to take the derivative of the outside part with the original inner part and multiply that by the derivative of the inside part.

For example: Differentiate $f(x) = (2x - 3)^4$.

Step 1: Pretend like the inner value of parenthesis is "x."

Step 2: Differentiate. Now you have $f'(x) = 4x^3$

Step 3: However, the inner parenthesis didn't simply indicate, "x." Replace with original values. $f'(x) = 4(2x - 3)^3$.

Step 4: Differentiate inner value. The derivative of $2x - 3$ is "2."

Step 5: Multiply the coefficients. $f'(x) = 2 \cdot 4(2x - 3)^3$.

Step 6: Simplify: $f'(x) = 8(2x - 3)^3$.

1.) Find $f'(x)$ for $f(x) = (4x - 8)^3$.

2.) Find $g'(x) = \sqrt{2x - 4}$

Hint: $\sqrt{\quad}$ is the equivalent of a $1/2$ exponent

3.) Find dy/dx for $y = (5x - 4x^3 + 3)^7$

4.) Suppose $h(x)$ has a minimum point at $x = 1.5$. What is the value of the derivative at $x = 1$ and $x = 2$? Positive, negative, or zero? Why?
