DATE: _____

Derivatives Practice

Understanding Derivatives

1) Given $\lim_{h\to 0}\frac{2(-1+h)^3+4-(2(-1)^3+4)}{h}$ as an expression for the derivative of $f(x)$ at $x=c$, identify the function $f(x)$ and the value of c.

2) Given $\lim_{x\to 4}\frac{\ln(3x-2)-\ln 10}{x-4}$ as an expression for the derivative of $g(x)$ at $x=c$, identify the function $g(x)$ and the value of c.

3) An equation for the line tangent to the graph of the function f at $x=-2$ is $y+4=\frac{1}{5}(x+2)$. What is $f'(-2)$?

Derivatives Numerically

4) The table below gives select values for the differentiable function f, find the best estimate for $f'(12)$ that can be made from the given table.

x	6	7	10	13	15
$f(x)$	-1	5	2	-3	-6

Derivatives using TI-Nspire

Using your graphing calculator (remember answers need to be with 3 decimal places), given:

5) $f(x)=x^2e^{\cos x}$, find $f'(2)$.

Derivatives Analytically (Algebraically)

6) Using the definition of the derivative, find the derivative of the function $f(x)=x^2+3x-4$.

7) Using the definition of the derivative, find the $g'(3)$ where $g(x)=\frac{1}{x}$.

8) Using the alternate form of the derivative, find slope of the tangent line to $h(x)=\sqrt{x}$ at $x=4$.