

CALCULUS SUDOKU #1

	8							Clue #1
	Clue #2	Clue #8	8		9			1
		1	Clue #11	$\int_2^3 2x dx$			Clue #3	
8	1	6	7			$\sum_{k=-2}^2 (2k+1)$		
9					1		Clue #4	
			Clue #9	Clue #5				
	Clue #6				8		Clue #12	Good # to approx π or e
Clue #7							8	
			3	1			Clue #10	6

Clue #1: If $f(g(x)) = (2x^3 - x)^4$, find $g'(1)$.

Clue #2: $\lim_{h \rightarrow 0} \frac{(2+h)^2 - 4}{h}$

Clue #3: Find $f'(4)$ if $f(x) = \frac{x-5}{x-3}$.

Clue #4: The y -intercept of the line tangent to $y = 4\sqrt{x} + \frac{8}{\sqrt{x}} - 3$ at $x = 4$.

Clue #5: Find $f'(3)$ if $f(x) = (2x - 7)^3$.

Clue #6: Find the slope of the line normal to the curve $(x^2 + 4)y = 8$ at $(2, 1)$. (This curve is called the Witch of Agnesi.)

Clue #7: If $f(x) = (x - 1)^{2/3}$, then $f(x)$ is not differentiable at $x = \underline{\hspace{2cm}}$.

Clue #8: If $f(x) = 8 \sin^6 x - \cos^2 x$, find $f'(\pi/4)$.

Clue #9: If $f(x) = \begin{cases} ax^2 + b, & \text{if } x \geq -2 \\ -4x, & \text{if } x < -2 \end{cases}$ is continuous and differentiable at $x = -2$, what is $a + b$?

Clue #10: $\lim_{x \rightarrow -\infty} \frac{\sqrt{16x^2 + x - 1}}{3 - x}$

Clue #11: The y -intercept of the line tangent to $f(x) = \frac{x}{x-1}$ at $(2, 2)$.

Clue #12: Find $f'(1)$ if $f(x) = x^3 + x^2$.