I. Find the derivative of each of the following. Do not simplify your answers.

1. $y = \dfrac{5}{\sqrt[7]{3x-5}}$ (Rewrite first!)

2. $y = \left(x^3 + 6\right)^{23}$

3. $y = \left(\left(x^2+1\right)^4 + 3\right)^6 + 5x + 10$

II. Suppose f and g and their first derivatives have the following values at $x = 2$ and $x = 4$:

x	$f(x)$	$g(x)$	$f'(x)$	$g'(x)$
2	5	4	7	-3
4	1	-2	9	8

a. Find $h'(2)$ if $h(x) = \sqrt{f(x) + g(x)}$

b. Find $h'(2)$ if $h(x) = f\left(g(x)\right)$

III. Suppose f and g and their first derivatives have the following values at $x = 1$ and $x = 2$:

x	$f(x)$	$g(x)$	$f'(x)$	$g'(x)$
1	6	1	–7	1/2
2	3	–1	1/2	–4

Find $h'(2)$ if $h(x) = f\left(x + g(x)\right)$.

Then find the equation of the tangent line to the graph of $y = h(x)$ at $x = 2$.

IV. Find the third derivative of $y = \sqrt{3x+2}$.