Math 251

Iterated Derivatives Name:_____

You may use a calculator to compute solutions but show how to get them with calculus.

Show all relevant work!

Find the following derivatives. Show work behind your thinking - no bare answers. You may use exponential notation in your solutions wherever appropriate.

(1) Consider $f(x) = x^{67}$

(a) Find $f^{(67)}(x)$

(b) Find $f^{(43)}(x)$

(2) Find $\dfrac{\mathrm{d}^{67}}{\mathrm{d}x^{67}}(x^{-2})$

(3) Find $\dfrac{\mathrm{d}^{84}}{\mathrm{d}x^{84}}\left(e^{2x} - \dfrac{1}{e^x}\right)$

(4) Find $\dfrac{\mathrm{d}^{133}}{\mathrm{d}t^{133}}(\cos(\pi t))$