Derive some Answers

Consider the function $f(x) = \sum_{n=0}^{\infty} \frac{n+5}{2^n} (x-3)^n$.

1. Write out the first five terms of the series. *Note that the series starts at $n = 0$.*

2. Find $f(3)$. *Hint: it is not zero.*

3. Find $f'(3)$.

4. Find $f^{(50)}(3)$.