6. [9 points] Suppose the Taylor series for a function $f(x)$ around $x = 3$ is

$$\sum_{n=1}^{\infty} \frac{(6)^{-n}((2n)!)}{n!(n-1)!}(x-3)^{2n}$$

a. [6 points] Compute the radius of convergence for this series. Be sure to fully justify your answer and show all work. Do not compute the interval of convergence.

Radius of Convergence: _____

b. [3 points] Find $f^{(2022)}(3)$ and $f^{(2023)}(3)$.

$f^{(2022)}(3)=$ _____ $f^{(2023)}(3)=$ _____