

8. [9 points] Consider the function $F(t)$ defined by the power series

$$F(t) = \sum_{n=0}^{\infty} \frac{n(t-5)^{2n}}{3^n(n+1)}.$$

- a. [6 points] Find the **radius** of convergence of the power series. Show all your work.

- b. [3 points] Calculate $F^{(40)}(5)$. Give an **exact** answer.