9. [3 points] For $x > 0$, let $g(x)$ be a positive continuous function, and

$$G(x) = \int_x^{e^{x^2}} \frac{1}{g(t)}\, dt.$$

Find $G'(x)$. Your answer may involve g.

10. [6 points] Compute the **radius** of convergence of the power series

$$\sum_{n=0}^{\infty} \frac{8^n}{(n+1)^2} x^{3n+1}$$

Be sure to show all your reasoning.

11. [12 points] Let $f(x) = x(1-x)^{-1/2}$.

a. [4 points] Write down the first 3 non-zero terms of the Taylor series for $f(x)$ centered at $x = 0$. Show your work.

b. [3 points] Let $F(x)$ be an antiderivative of $f(x)$ such that $F(0) = 2$. Write down the first 4 non-zero terms of the Taylor series for $F(x)$ centered at $x = 0$. Show your work.

c. [5 points] Compute the exact value of $\displaystyle\int_0^{3/4} f(x)\, dx$. Show each step of your computation.