6. [8 points]

a. [2 points] Find all values of $p$ for which the integral \( \int_{-\infty}^{\infty} \frac{1}{(x^2 + 4)^p} \, dx \) converges. You do not need to show your work. Circle your final answer.

b. [2 points] Find all values of $p$ for which the integral \( \int_{e}^{\infty} \frac{e^{px}}{x^3} \, dx \) converges. You do not need to show your work. Circle your final answer.

c. [4 points] Find the radius of convergence of the Taylor series \( \sum_{n=1}^{\infty} \frac{x^{2n}}{n2^n} \).