This quiz is intended solely to help assess your mathematical preparation for 394. It will be self-graded and the grade will not be recorded. If the questions are unfamiliar to you, you should consider taking preparatory courses in calculus before taking 394.

1. \( \binom{10}{2} = \) 
2. \( \int_0^\infty e^{-2x} \, dx = \) 
3. \( \frac{d}{dx} \frac{1}{1-x} = \) 
4. \( 0.1\% \text{ of } 50 = \) 
5. \( \frac{5!}{4!} = \) 
6. For \( |x| < 1, \ \sum_{k=0}^\infty x^k = \) 
7. For \( |x| < 1, \ \sum_{k=0}^\infty k x^{k-1} = \) 
8. For \( f(x,y) = 1 \text{ if } 0 < x < y < 1 \) and \( f(x,y) = 0 \text{ otherwise} \) 
\( \int \int f(x,y) \, dxdy = \) 
9. \( 1 + 2 + \ldots + n = \) 
10. \( 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \ldots = \) 
11. \( \frac{d}{dx} (x \log x) = \) 
12. In a randomized study, how many ways can 5 out of 10 persons be chosen to receive the experimental treatment while the others get a placebo?