Quiz 8

Name:_____

The error term in Simpson's rule is

$$\left| \int_a^b f(x)\,dx - (\text{Simpson's rule}) \right| \leq \frac{M(b-a)^5}{2880n^4}$$

where n is the number of subintervals used, and M is a number such that $|f^{(4)}(x)| \leq M$ for $a \leq x \leq b$. For the function

$$f(x) = 7 + \frac{x^6}{30}$$

how large do we need to take n so that we are sure that Simpson's rule approximates $\int_1^4 + f(x)\,dx$ accurate to five decimal places.