

Problems on Taylor series and Taylor polynomials with remainder

1. Find $\frac{1}{e}$ with an error less than $\frac{1}{7!}$. (Do not simplify your answer.)

Answer

2. Find $\lim_{x \rightarrow 0} \frac{(\sin x - x)^3}{x^9}$ and simplify your answer.

Answer

3. Suppose you approximate $f(8)$ by the second degree Taylor polynomial for f at 10, and suppose you know that the third derivative of f is less than 3 in absolute value. Estimate the error in the approximation.

Answer

4. Find the third degree Taylor polynomial of $\ln(1 + x)$ at 0. Circle your answer; be sure to circle precisely the **Taylor polynomial**.

5. Use this to approximate $\ln 1.1$. Estimate the error in this approximation. Give your reasons.

Answers to 4 and 5