Name _____ Score _____ Teacher _____ Date _____

Taylor Series Approximations and Error

Use standard Taylor or Maclaurin series to represent a function, approximate a nearby value, and distinguish the exact target from the polynomial approximation and its error bound.

1. **For f(x)=1/(1-x) centered at a=0, Write the order-4 Taylor polynomial and the infinite-series representation, state its convergence interval, and verify that x=1/10 is inside it. Use the lagrange method for the error statement.**

2. **For f(x)=cos(x) centered at a=0, Write the order-4 Taylor polynomial and the infinite-series representation, state its convergence interval, and verify that x=4/5 is inside it. Use the lagrange method for the error statement.**

Separate the object, test, endpoint, approximation, and conclusion.

Name _____ Score _____ Teacher _____ Date _____

Taylor Series Approximations and Error

Use standard Taylor or Maclaurin series to represent a function, approximate a nearby value, and distinguish the exact target from the polynomial approximation and its error bound.

3. **For f(x)=ln(1+x) centered at a=0, Use the lagrange remainder method to bound the error at the exact point x=2/5. Use the lagrange method for the error statement.**

4. **For f(x)=e^x centered at a=0, Write the order-4 Taylor polynomial and the infinite-series representation, state its convergence interval, and verify that x=9/20 is inside it. Use the lagrange method for the error statement.**

Separate the object, test, endpoint, approximation, and conclusion.

Name _____ Score _____ Teacher _____ Date _____

Taylor Series Approximations and Error

Use standard Taylor or Maclaurin series to represent a function, approximate a nearby value, and distinguish the exact target from the polynomial approximation and its error bound.

5. **For f(x)=cos(x) centered at a=0, Use the order-4 polynomial to approximate the exact target f(2/5)=cos(2/5). Use the alternating method for the error statement.**

6. **For f(x)=sin(x) centered at a=0, Use the lagrange remainder method to bound the error at the exact point x=2/5. Use the lagrange method for the error statement.**

Separate the object, test, endpoint, approximation, and conclusion.