

Alternating Estimation Theorem

1. $f(x) = \frac{1}{1+x}$ centered at $x = 0$
 - a. Given the function, find the third order polynomial

 - c. Use the alternate estimation theorem to determine the error bound $|f(x) - P(x)| \leq R$ at $x = -.1$

2. $f(x) = \sin x$ centered at $x = 0$
 - a. Given the function, find the 2nd order polynomial

 - c. Use the alternate estimation theorem to determine the error bound $|f(x) - P(x)| \leq R$ at $x = -.1$

3. $f(x) = \cos x$ centered at $x = 0$
 - a. Given the function, find the third order polynomial

 - c. Use the alternate estimation theorem to determine the error bound $|f(x) - P(x)| \leq R$ at $x = .1$

4. $f(x) = \ln(1+x)$ centered at $x = 0$
 - a. Given the function, find the fifth order polynomial

 - c. Use the alternate estimation theorem to determine the error bound $|f(x) - P(x)| \leq R$ at $x = .1$

5. $f(x) = x^{-2}$ centered at $x = 1$
 - a. Given the function, find the third order polynomial

 - c. Use the alternate estimation theorem to determine the error bound $|f(x) - P(x)| \leq R$ at $x = 1.1$