Alternating Estimation Theorem

1. $f(x)=\frac{1}{1+x^2}$ centered at x = 0

a. Given the function, find the sixth order polynomial

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

2. $f(x)=\sin(3x)$ centered at x = 0

a. Given the function, find the 2nd order polynomial

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

3. $f(x)=\cos(4x)$ centered at x = 0

a. Given the function, find the third order polynomial

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

4. $f(x)=\ln(1+x^2)$ centered at x = 0

a. Given the function, find the fifth order polynomial

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

5. $f(x)=x^{-3}$ centered at x = 1

a. Given the function, find the third order polynomial

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