CHEM106: Assignment 1

Math Foundations of Quantum Mechanics

1. Evaluate the first order derivative for the following functions.

1. 



 

1. 

 

2. Evaluate the following integrals.

1. = 
2. = 
3. = 

3. Given , evaluate the partial derivatives and .

a. 

b. 

4. Apply the following operators to the function .

1. 



 

1. 



5. Use the Taylor series expansion to prove the Euler relation .

Outline:

1. Generate the series expansion for  and .





2. Combine and .

 