

3)

Code:

```
def compositeTrapezoid(f, a, b, n):  
    # define h and other sums  
    h = (b - a) / n  
    sum = f(a) + f(b)  
  
    # perform trapezoid  
    for i in range(1, n):  
        x = a + i * h  
        sum += 2 * f(x)  
  
    # return as given by composite formula  
    return sum * h / 2
```

```
def compositeSimpsons(f, a, b, n):  
    if n % 2 == 1: # ensure n is even  
        n += 1  
    # define h and other sums  
    h = (b - a) / n  
    sum = f(a) + f(b)  
  
    # perform composite simpsons summation  
    for i in range(1, n):  
        x = a + i * h  
        if i % 2 == 0:  
            sum += 2 * f(x)  
        else:  
            sum += 4 * f(x)  
  
    # return as given by composite formula  
    return sum * h / 3
```

Output:

```
Composite Trapezoidal Rule (n=11106): 2.7468015318911543  
Composite Simpson's Rule (n=394): 2.746801533860976  
Default quad Evaluation (n=147): 2.7468015338900327  
Quad Evaluation 1e-4 tolerance (n=63): 2.746801533909586  
  
Error from default evaluation of quad():  
-> Trapezoidal Rule: 1.9988783961366607e-09  
-> Simpson's Rule: 2.9056757000489597e-11
```