

1.

```
(a) Composite Trapezoidal Rule: 0.396148  
(b) Composite Simpson's Rule: 0.385664  
(c) Composite Midpoint Rule: 0.380805
```

2.

```
高斯求積法 n=3 的結果: 0.19225938  
高斯求積法 n=4 的結果: 0.19225936  
精確值: 0.19225936  
n=3 的誤差: 0.00000002  
n=4 的誤差: 0.00000000
```

3.

```
Simpson's Rule Result (n = m = 4): 0.511988  
Gaussian Quadrature Result (n = m = 3): 0.511866  
Exact Integral Value: 0.511845  
Error (Simpson): 1.43e-04  
Error (Gaussian): 2.09e-05
```

4.

(a) 變數變換後近似值： $0.52823$

(b) 變數變換後近似值： $0.28653$