1.

```
=== Least-Squares Approximations ===

(a) Quadratic  y ≈ a0 + a1 x + a2 x²
    a0 = 3.08639330
    a1 = -1.88374644
    a2 = 6.69118439
    SSE = 5.24569e-03 ,  RMSE = 2.56068e-02

(b) Exponential  y ≈ b e^ax
    b  = 21.44454405
    a  = 0.39849541
    SSE = 9.49830e+01 ,  RMSE = 3.44570e+00

(c) Power  y ≈ b x^a
    b  = 6.23895215
    a  = 2.01963428
    SSE = 1.17207e-02 ,  RMSE = 3.82765e-02
```

2.

```
最小平方二次多項式  p₂(x) = a0 + a1 x + a2 x²
a0 = 0.4982793074
a1 = 0.3265483312
a2 = -0.2326314450

RMSE ≈ 4.02621e-02
```

3.

```
(b) ∫₀¹ S₄(x) dx = 0.1976721965
(c) ∫₀¹ x² sin x dx = 0.2232442755
    Absolute difference = 2.56e-02

(d) Discrete least-squares error  E(S4) = 7.7401575888e-02
```