Updates on the Book

1. Formula List Page 6, Chapter 5

✓ Log-log models:

1. $y = k \cdot x^n \Leftrightarrow \ln y = n \ln x + \ln k$: Log-log model
2. n : Gradient of the straight line graph on $\ln y$-$\ln x$ plane
3. $\ln k$: Vertical intercept of the straight line graph on $\ln y$-$\ln x$ plane

2. Formula List Page 24, Chapter 20

$\int_a^b f(x)\mathrm{d}x$: Area under the graph of $f(x)$ and above the x-axis, between $x = a$ and $x = b$, where $f(x) \geq 0$

3. Formula List Page 33, Chapter 31

✓ Linear regression:

$y = ax + b$: Regression line of y on x

$SS_{res} = \sum_{i=1}^{n} (y_i - \hat{y}_i)^2$: Sum of square residuals

4. Set 1 Paper 1 Page 28, Question 18

Let σ^2 be the known population variance. It is known that the width of the 99% confidence interval for the population mean can be expressed by $2z\left(\frac{\sigma}{\sqrt{n}}\right)$, where n is the sample size and z is given as 2.575829303.

5. Set 2 Paper 1 Page 26, Question 17

The following table shows the cost x (in USD) of the five products in the company and the corresponding revenue y (in USD).

6. Set 3 Paper 1 Page 18, Question 11

Find the value of each of the following, giving your answer as a rational number.

7. Set 3 Paper 3 Page 8, Question 2

A_n is a 2×2 matrix representing a sequence of enlargements about the origin, with a variable scale factor $k(n)=a\cdot b^n$, a, $b\in\mathbb{R}$.

8. Set 3 Paper 3 Page 9, Question 2

B_n is a 2×2 matrix representing a sequence of reflections about the line $y=(\tan(n\cdot45^\circ))x$.

Note: The line of reflection is defined as $x=0$ when $n=2,6,10,14,\cdots$.

9. Set 4 Paper 2 Page 10, Question 3

(e) State whether the estimate in (d) overestimates or underestimates the area of R.