

## 5.2 The Definite Integral

### 單選題

1. Evaluate the limit  $\lim_{n \rightarrow \infty} \frac{1}{2n} \sum_{i=1}^n \left( \frac{e^{\frac{4+\frac{6}{n}i}}}{3+\frac{3}{n}i} \right)$  as a definite integral.

(A)  $\int_2^5 \frac{e^{2x}}{6(1+x)} dx$ ;      (B)  $\int_0^3 \frac{e^{4+2x}}{2(3+x)} dx$ ;

(C)  $\int_0^1 \frac{e^{4+x^6}}{2(3+x^3)} dx$ ;      (D)  $\int_3^6 \frac{e^{1+2x}}{6x} dx$ .

Ans: A [99 學年度]

2. Evaluate  $\lim_{n \rightarrow \infty} \frac{1}{n^{16}} [1^{15} + 2^{15} + \cdots + n^{15}] =$

(A) 0;      (B) 1;      (C)  $\frac{1}{15}$ ;      (D)  $\frac{1}{16}$ .

Ans: D [101 學年度]

### 多選題

1. Let  $I = \lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{1}{2n} \left[ 4 - 6 \left( \frac{i}{2n} \right)^2 \right]$ . Which of the following statements are **true**?

(A)  $I = \int_0^1 \left( 2 - \frac{3}{4} x^2 \right) dx$ .      (B)  $I = \int_0^{\frac{1}{2}} (4 - 6x^2) dx$ .

(C)  $I = \int_0^1 (4 - 6x^2) dx$ .      (D)  $I = \int_0^{\frac{1}{2}} \left( 2 - \frac{3}{4} x^2 \right) dx$ .

Ans: AB [100 學年度]