

習題集 1

(對應 [張旭微積分](#) 積分前篇 重點一：定積分直觀觀念)

1. Find $\int_0^{66} -6 \, dx$.

2. Find $\int_1^{10} [x] \, dx$.

3. Find $\int_{\sqrt{6}}^6 6 - 6x \, dx$.

4. Let $f(x) = \begin{cases} 1 - 2x, & x < 0 \\ x + 1, & 0 \leq x < 2 \end{cases}$. Find $\int_{-1}^2 f(x) \, dx$.

5. Find $\int_{-4}^4 \sqrt{16 - x^2} \, dx$.

6. Find $\int_{-2}^2 \sqrt{16 - x^2} \, dx$.

7. Find $\int_0^2 1 - \sqrt{1 - (x - 1)^2} \, dx$.

8. Let $N(x) = \begin{cases} \sqrt{x - x^2}, & 0 \leq x \leq \frac{1}{4} \\ -\sqrt{3}(x - \frac{1}{2}), & \frac{1}{4} < x \leq \frac{1}{2} \end{cases}$. Find $\int_0^{\frac{1}{2}} N(x) \, dx$.

9. $\int_0^2 x^3 - 3x^2 + 3x - 1 \, dx$

10. Find $\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \tan x \, dx + \int_{\frac{2\pi}{3}}^{\pi} \cot x \, dx$.