

習題集 9

(對應 [張旭微積分](#) 積分前篇重點九：四大積分基本方法之一：變數變換法)

1. Find $\int x^3 \sqrt{x^4 + 1} \, dx$.

2. Find $\int x^{2020} e^{x^{2021} + 2022} \, dx$

3. Find $\int_2^3 \frac{2x+1}{x^2+x+4} \, dx$.

4. Find $\int \frac{dx}{(\cos^2 x) \sqrt{1 + \tan x}}$

5. Find $\int_0^{\frac{\pi}{2}} \frac{\sin 2x \, dx}{2 + \cos x}$.

6. Find $\int \frac{dx}{1 + e^x}$.

7. Find $\int \frac{dx}{x(\ln x)(\ln \ln x)}$.

8. Find $\int_e^{e^e} \frac{\ln \ln x}{x} \, dx$.

9. Find $\int \tan^{\frac{3}{2}} x \sec^4 x \, dx$. [Hint: $(\tan x)' = \sec^2 x$]

10. Determine $\int \tan x \ln(\cos x) \, dx$.