習題集 6

(對應 張旭微積分 積分前篇重點六：不定積分與反導函數)

1. Evaluate $\displaystyle\int 2x+3x^2+\frac{1}{2\sqrt{x}}\ dx$.

2. Evaluate $\displaystyle\int x^{\frac{4}{3}}-3\frac{1}{x^5}\ dx$.

3. Evaluate $\displaystyle\int e^{3x}\ dx$.

4. Evaluate $\displaystyle\int \cos^2 x+\sec^2 x\ dx$.   [Hint: Half-angle Formula]

5. Evaluate $\displaystyle\int (2x-1)^{100}\ dx$.

6. Evaluate $\displaystyle\int (1+x^7)^7 7x^6\ dx$.

7. Evaluate $\displaystyle\int \sin x+\sin^2 x+\sin^3 x\ dx$. [Hint: Multiple-angle Formula]

8. Evaluate $\displaystyle\int \sin x\cos 3x\ dx$. [Hint: Product-to-sum Formula]

9. Evaluate $\displaystyle\int_1^2 2xe^{x^2}\ dx$. [Hint: The integrand is a function obtained by applying Chain Rule to some function]

10. Evaluate $\displaystyle\int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \frac{\cos x}{\sin^4 x}\ dx$. [Hint: The integrand is a function obtained by applying Chain Rule to some function]