習題集 2

(對應 張旭微積分 微分篇重點二：微分運算律)

1. Find $(\frac{1}{x})'$ and $(\frac{1}{\sqrt{x}})'$.
2. Find $(x\log_2 x - x)'$.
3. Find the derivative of $f(x)=\frac{x+3}{x^2-3}$ at $x=3$.
4. Find the derivative of $f(x)=\frac{x\sqrt{x}+4}{\sqrt{x}-4}$ at $x=4$. [Hint: $(\sqrt{x})'=\frac{1}{2\sqrt{x}}$ from 習題 1]

In question 5~9, suppose $g(x)=f'(x)$, find $g'(x)$.

5. $f(x)=x^n$ with $n\geq 2$.
6. $f(x)=a^x$, with $a>1$.
7. $f(x)=\log_a x$, with $a>1$.
8. $f(x)=\sin x$.
9. $f(x)=\tan x$.

10. Find $f'(0)$ if $f(x)=(e^x-1)(e^x-2)(e^x-3)\cdots(e^x-666)$.