**Topic: Standard derivatives and antiderivatives**

| | |
|---|---|
| $(x^n)' = nx^{n-1}$, $n =$ constant | $\int x^n dx = \frac{x^{n+1}}{n+1} + C, n \neq -1$ |
| $(e^{ax})' = ae^{ax}$, $a =$ constant | $\int e^{ax} dx = \frac{1}{a} e^{ax} + C$, $a =$ constant |
| $(\ln(x))' = \frac{1}{x}$ | $\int \frac{1}{x} dx = \ln(x) + C$ |
| $(a^x)' = a^x \ln(a)$, $a =$ constant | $\int a^x dx = \frac{a^x}{\ln(a)} + C$, $a =$ constant |
| $(\sin(x))' = \cos(x)$ | $\int \cos(x) dx = \sin(x) + C$ |
| $(\cos(x))' = -\sin(x)$ | $\int \sin(x) dx = -\cos(x) + C$ |
| $(\tan(x))' = (\sec(x))^2$ | $\int \tan(x) dx = -\ln(\lvert\cos(x)\rvert) + C$ |
| $(\cot(x))' = -(\csc(x))^2$ | $\int \cot(x) dx = \ln(\lvert\sin(x)\rvert) + C$ |
| $(\sec(x))' = \sec(x)\tan(x)$ | $\int \sec(x) dx = \ln(\lvert\sec(x) + \tan(x)\rvert) + C$ |
| $(\csc(x))' = -\csc(x)\cot(x)$ | $\int \csc(x) dx = -\ln(\lvert\csc(x) + \cot(x)\rvert) + C$ |
| $(f(ax+b))' = af'(ax+b)$ | $\int f(ax+b) dx = \frac{1}{a} F(ax+b) + C$ where $F(x) =$ antiderivative of $f(x)$ |