Differentiation

1. $\frac{d}{dx}(\sin x) = \cos x$
2. $\frac{d}{dx}(\cos x) = -\sin x$
3. $\frac{d}{dx}(\tan x) = \sec^2 x$
4. $\frac{d}{dx}(\sec x) = \sec x \cdot \tan x$
5. $\frac{d}{dx}(\cot x) = -\operatorname{cosec}^2 x$
6. $\frac{d}{dx}(\operatorname{cosec} x) = -\operatorname{cosec} x \cdot \cot x$
7. $\frac{d}{dx}(x^n) = nx^{n-1}$
8. $\frac{d}{dx}(c) = 0$
9. $\frac{d}{dx}[f(x)]^n = n[f(x)] \cdot \frac{d}{dx}(f(x))$
10. $\frac{d}{dx}(u \times v) = u\frac{d}{dx}(v) + v \cdot \frac{d}{dx}(u)$
11. $\frac{d}{dx}\left(\frac{u}{v}\right) = \frac{-u\frac{d}{dx}(v) + v \cdot \frac{d}{dx}(u)}{v^2}$
12. $\frac{d}{dx}\left(\frac{1}{x}\right) = -\frac{1}{x^2}$
13. $\frac{d}{dx}(\sqrt{x}) = \frac{1}{2\sqrt{x}}$
14. $\frac{d}{dx}(\ln x) = \frac{1}{x} = \frac{d}{dx}(\log e^x)$
15. $\frac{d}{dx}\left(e^{f(x)}\right) = e^{f(x)} \cdot \frac{d}{dx}(f(x))$
16. $\frac{d}{dx}(\log a^x) = \frac{1}{x \ln a}$
17. $\frac{d}{dx}(a^x) = a^x \cdot \ln a$
18. $\frac{d}{dx}(\sin^{-1} x) = \frac{1}{\sqrt{1-x^2}}$
19. $\frac{d}{dx}(\cos^{-1} x) = \frac{-1}{\sqrt{1-x^2}}$
20. $\frac{d}{dx}(\tan^{-1} x) = \frac{1}{1+x^2}$
21. $\frac{d}{dx}(\cot^{-1} x) = \frac{-1}{1+x^2}$
22. $\frac{d}{dx}(\sec^{-1} x) = \frac{1}{x\sqrt{x^2-1}}$
23. $\frac{d}{dx}(\operatorname{cosec}^{-1} x) = \frac{-1}{x\sqrt{x^2-1}}$

Integration

1. $\int 1\,dx = x + c$
2. $\int x^n\,dx = \frac{x^{n+1}}{n+1} + c$
3. $\int \cos x\,dx = \sin x + c$
4. $\int \sin x\,dx = -\cos x + c$
5. $\int \sec^2 x\,dx = \tan x + c$
6. $\int \operatorname{cosec}^2 x\,dx = -\cot x + c$
7. $\int \sec x \tan x\,dx = \sec x + c$
8. $\int \operatorname{cosec} x \cot x\,dx = -\operatorname{cosec} x + c$
9. $\int \tan x\,dx = \ln|\sec x| + c$
10. $\int \frac{1}{x}\,dx = \ln|x| + c$
11. $\int e^x\,dx = e^x + c$
12. $\int a^x\,dx = \frac{a^x}{\ln a} + c$
13. $\int \ln x\,dx = x\ln x - x + c$
14. $\int \frac{1}{\sqrt{1-x^2}}\,dx = \sin^{-1} x + c$
15. $\int -\frac{1}{\sqrt{1-x^2}}\,dx = \cos^{-1} x + c$
16. $\int \frac{1}{1+x^2}\,dx = \tan^{-1} x + c$
17. $\int -\frac{1}{1+x^2}\,dx = \cot^{-1} x + c$
18. $\int \frac{1}{x\sqrt{x^2-1}}\,dx = \sec^{-1} x + c$
19. $\int -\frac{1}{x\sqrt{x^2-1}}\,dx = \operatorname{cosec}^{-1} x + c$

⊛ $\int \cot x\,dx = \ln|\sin x| + c$

⊛ $\int \sec x\,dx = \ln|\sec x + \tan x| + c$

⊛ $\int \operatorname{cosec} x\,dx = \ln|\operatorname{cosec} x - \cot x| + c$