1 Trigonometric Derivatives

$$\frac{d}{dx}\left(\sin(x)\right) = \cos(x), \qquad \frac{d}{dx}\left(\cos(x)\right) = -\sin(x), \qquad \frac{d}{dx}\left(\tan(x)\right) = \sec^2(x)$$
$$\frac{d}{dx}\left(\csc(x)\right) = -\csc(x)\cot(x), \qquad \frac{d}{dx}\left(\sec(x)\right) = \sec(x)\tan(x), \qquad \frac{d}{dx}\left(\cot(x)\right) = -\csc^2(x)$$
$$\frac{d}{dx}\left(\arcsin(x)\right) = \frac{1}{\sqrt{1-x^2}}, \qquad \frac{d}{dx}\left(\arccos(x)\right) = -\frac{1}{\sqrt{1-x^2}}, \qquad \frac{d}{dx}\left(\arctan(x)\right) = \frac{1}{1+x^2}$$
$$\frac{d}{dx}\left(\operatorname{arccsc}(x)\right) = -\frac{1}{x\sqrt{x^2-1}}, \qquad \frac{d}{dx}\left(\operatorname{arcsec}(x)\right) = \frac{1}{x\sqrt{x^2-1}}, \qquad \frac{d}{dx}\left(\operatorname{arccot}(x)\right) = -\frac{1}{1+x^2}$$

2 Trigonometric Integrals

$$\int \sin(x)\mathrm{d}x = -\cos(x) + C, \qquad \int \cos(x)\mathrm{d}x = \sin(x) + C$$
$$\int \sec^2(x)\mathrm{d}x = \tan(x) + C, \qquad \int \csc^2(x)\mathrm{d}x = -\cot(x) + C$$
$$\int \sec(x)\tan(x)\mathrm{d}x = \sec(x) + C, \qquad \int \csc(x)\cot(x)\mathrm{d}x = -\csc(x) + C$$
$$\int \tan(x)\mathrm{d}x = \ln(|\sec(x)|) + C, \qquad \int \cot(x)\mathrm{d}x = \ln(|\sin(x)|) + C$$
$$\int \sec(x)\mathrm{d}x = \ln(|\sec(x) + \tan(x)|) + C, \qquad \int \csc(x)\mathrm{d}x = \ln(|\csc(x) - \cot(x)|) + C$$
$$\int \frac{1}{\sqrt{1-x^2}}\mathrm{d}x = \arcsin(x) + C, \qquad \int \frac{1}{1+x^2}\mathrm{d}x = \arctan(x) + C$$
$$\int \frac{1}{x\sqrt{x^2-1}}\mathrm{d}x = \operatorname{arcsec}(x) + C$$

3 Trigonometric Identities

$$\csc(x) = \frac{1}{\sin(x)}, \qquad \sec(x) = \frac{1}{\cos(x)} \qquad \tan(x) = \frac{\sin(x)}{\cos(x)}$$
$$\cot(x) = \frac{\cos(x)}{\sin(x)}, \qquad \sin(-x) = -\sin(x) \qquad \cos(-x) = \cos(x)$$
$$\sin^2(x) + \cos^x(x) = 1 \qquad 1 + \tan^2(x) = \sec^2(x) \qquad 1 + \cot^2(x) = \csc^2(x)$$

4 Double and half angle Formulas

$$\sin(2x) = 2\sin(x)\cos(x)$$
$$\cos(2x) = \cos^2(x) - \sin^2(x) = 2\cos^2(x) - 1 = 1 - 2\sin^2(x)$$
$$\tan(2x) = \frac{2\tan(x)}{1 - \tan^2(x)}$$
$$\sin^2(x) = \frac{1 - \cos(2x)}{2}$$
$$\cos^2(x) = \frac{1 + \cos(2x)}{2}$$