

## Formulas for Math 141

### Derivatives.

$$\begin{array}{llll} \frac{d}{dx}(\sin x) = & \frac{d}{dx}(\csc x) = & \frac{d}{dx}(\sin^{-1} x) = & \frac{d}{dx}(\cos^{-1} x) = \\ \frac{d}{dx}(\cos x) = & \frac{d}{dx}(\sec x) = & \frac{d}{dx}(\sec^{-1} x) = & \frac{d}{dx}(\csc^{-1} x) = \\ \frac{d}{dx}(\tan x) = & \frac{d}{dx}(\cot x) = & \frac{d}{dx}(\tan^{-1} x) = & \frac{d}{dx}(\cot^{-1} x) = \\ \frac{d}{dx}(a^u) = & \frac{d}{dx}(e^u) = & \frac{d}{dx}(\log_a u) = & \frac{d}{dx}(\ln u) = \end{array}$$

### Integrals.

$$\begin{array}{llll} \int \frac{1}{u} du = & \int e^u du = & \int a^u du = & \\ \int \sin x dx = & \int \csc x dx = & \int \sec^2 x dx = & \int \csc x \cot x dx = \\ \int \cos x dx = & \int \sec x dx = & \int \csc^2 x dx = & \\ \int \tan x dx = & \int \cot x dx = & \int \sec x \tan x dx = & \\ \int \tan^2 x dx = & \int \cot^2 x dx = & & \\ \int \frac{1}{\sqrt{a^2 - x^2}} dx = & \int \frac{1}{x\sqrt{x^2 - a^2}} dx = & \int \frac{1}{a^2 + x^2} dx = & \end{array}$$

### Trig Identities

$$\sin^2 x + \cos^2 x = 1$$

Write the other 2 Pythagorean identities

$$\begin{array}{ll} \sin^2 x = & \sin 2x = \\ \cos^2 x = & \cos 2x = \end{array}$$

Know values of  $\sin x$ ,  $\cos x$ ,  $\tan x$  at  $x = 0, \frac{\pi}{6}, \frac{\pi}{4}, \frac{\pi}{3}, \frac{\pi}{2}$

### Derivative of an Inverse

$$\text{If } g = f^{-1}, \text{ then } g'(x) =$$

Log Properties-know all!