

# Basic Integrals/Antiderivatives all are needed for AB

<p>1. Operational Rules:</p> <p>Sums: <math>\int f \pm g \, dx = \int f \, dx \pm \int g \, dx + C</math></p> <p>Products: <math>\int f \cdot g \, dx \neq \int f \, dx \cdot \int g \, dx + C</math></p> <p>Quotients: <math>\int \frac{f}{g} \, dx \neq \frac{\int f \, dx}{\int g \, dx} + C</math></p>	<p>2. Power Functions:</p> <p>If <math>n \neq -1</math>: <math>\int x^n \, dx = \frac{1}{n+1} x^{n+1} + C</math></p> <p>If <math>n = -1</math>: <math>\int x^{-1} \, dx</math> or <math>\int \frac{1}{x} \, dx = \ln x  + C</math></p> <p>If <math>n = 0</math>: <math>\int k \, dx = kx + C</math> (constant function)</p>
<p>3. Exponential Functions: <math>\int a^x \, dx = \frac{1}{\ln a} a^x + C</math>      4. The <math>e</math> Function: <math>\int e^x \, dx = e^x + C</math></p>	
<p>5. Trigonometric Functions: <math>\int \sin x \, dx = -\cos x + C</math>      <math>\int \cos x \, dx = \sin x + C</math></p> <p style="text-align: center;"><math>\int \sec^2 x \, dx = \tan x + C</math>    OR    <math>\int \frac{1}{\cos^2 x} \, dx = \tan x + C</math></p>	
<p>6. Inverse Trig Functions: <math>\int \frac{1}{\sqrt{1-x^2}} \, dx = \arcsin x + C</math>      <math>\int \frac{1}{1+x^2} \, dx = \arctan x + C</math></p>	
<p>7. Reversing the Chain Rule for a 1<sup>st</sup> degree inside function: <math>\int f(kx) \, dx = \frac{1}{k} F(kx) + C</math>      Let <math>f = F'</math>.</p> <p style="text-align: right;"><small>ie. <math>F</math> is the anti-derivative of <math>f</math>.</small></p>	

## Trigonometric Ratios

$\cos \frac{\pi}{3} = \frac{1}{2}$	$\cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}$	$\cos \frac{\pi}{4} = \frac{\sqrt{2}}{2}$
$\sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}$	$\sin \frac{\pi}{6} = \frac{1}{2}$	$\sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$