

Mathematics Equation Sheet

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Integration

Trigonometric

$$\int \tan kx \, dx = \frac{1}{k} \ln |\sec kx|$$

$$\int \operatorname{cosec} kx \, dx = -\frac{1}{k} \ln |kx + \cot kx|, \quad \frac{1}{k} \ln |\tan \frac{1}{2}kx|$$

$$\int \sec kx \, dx = \frac{1}{k} \ln |\sec kx + \tan kx|$$

$$\int \cot kx \, dx = \frac{1}{k} \ln |\sin kx|$$

$$\int \sec^2 kx \, dx = \tan kx + c$$

Hyperbolic

$$\int \sinh x \, dx = \cosh x + c$$

$$\int \cosh x \, dx = \sinh x + c$$

$$\int \tanh x \, dx = \ln |\cosh x| + c$$

$$\int \frac{1}{\sqrt{1+x^2}} \, dx = \operatorname{arsinh} x + c$$

$$\int \frac{1}{1-x^2} \, dx = \arctan x + c$$

Vectors & Kinematics

Complex Numbers

Limits

Group Theory

Ordinary Differential Equations

Fourier Series

Complex Analysis