

$\frac{d}{dx} \sin x = \cos x$   
 $\frac{d}{dx} \cos x = -\sin x$   
 $\frac{d}{dx} \tan x = \sec^2 x$   
 $\frac{d}{dx} \cot x = -\operatorname{csc}^2 x$   
 $\frac{d}{dx} \sec x = \sec x \tan x$   
 $\frac{d}{dx} \operatorname{csc} x = -\operatorname{csc} x \cot x$

## Mathematics Drop-in Centre

### BASIC DIFFERENTIATION

You now know how to differentiate various trigonometric functions. You can also differentiate functions involving trigonometric functions. For example, if  $y = \sin x$ , then  $\frac{dy}{dx} = \cos x$ . If  $y = \cos x$ , then  $\frac{dy}{dx} = -\sin x$ . If  $y = \tan x$ , then  $\frac{dy}{dx} = \sec^2 x$ . If  $y = \cot x$ , then  $\frac{dy}{dx} = -\operatorname{csc}^2 x$ . If  $y = \sec x$ , then  $\frac{dy}{dx} = \sec x \tan x$ . If  $y = \operatorname{csc} x$ , then  $\frac{dy}{dx} = -\operatorname{csc} x \cot x$ .

$\tan x$	$\sec^2 x$
$\cot x$	$-\operatorname{csc}^2 x$
$\sec x$	$\sec x \tan x$
$\operatorname{csc} x$	$-\operatorname{csc} x \cot x$

