DIFFERENTIATION

FORMULAE

	FUNCTION	DERIVATIVE
	$y = x^n$	$\frac{dy}{dx} = nx^{n-1}$
	$y = (ax+b)^n$	$\frac{dy}{dx} = an(ax+b)^{n-1}$
	$y = e^x$	$\frac{dy}{dx} = e^x$
	$y = e^{ax+b}$	$\frac{dy}{dx} = ae^{ax+b}$
	$y = a^x$	$\frac{dy}{dx} = a^x \ln a$
	$y = \ln x$	$\frac{dy}{dx} = \frac{1}{x}$
	$y = \ln(ax+b)$	$\frac{dy}{dx} = \frac{a}{ax+b}$
	$y = \sin x$	$\frac{dy}{dx} = \cos x$
	$y = \cos x$	$\frac{dy}{dx} = -\sin x$
*	$y = \tan x$	$\frac{dy}{dx} = \sec^2 x$
*	$y = \sec x$	$\frac{dy}{dx} = \sec x \tan x$
*	$y = \cos ecx$	$\frac{dy}{dx} = -\cos ecx \cot x$
*	$y = \cot x$	$\frac{dy}{dx} = -\cos ec^2 x$
	$y = \sin(kx)$	$\frac{dy}{dx} = k\cos(kx)$
	$y = \sin^n x$	$\frac{dy}{dx} = n\sin^{n-1}(x)\cos(x)$
	$y = \sin^n kx$	$\frac{dy}{dx} = nk\sin^{n-1}(kx)\cos(kx)$
	PRODUCT RULE:	
	$y = u.v$	$\frac{dy}{dx} = u\frac{dv}{dx} + v\frac{du}{dx} = uv'+vu'$
	QUOTIENT RULE:	
*	$y = \frac{u}{v}$	$\frac{dy}{dx} = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2} = \frac{vu'-uv'}{v^2}$
	IMPLICIT DIFFERENTIATION:	
	y^n	$ny^{n-1}\frac{dy}{dx}$

* Given in the formula booklet