Product and Quotient Rule

Here are some functions that you **can** differentiate using the Product Rule and the Quotient Rule and some others that require the Chain Rule

Product Rule	Quotient Rule	Chain Rule
$x^2(3x-2)^4$	$\frac{x^2}{(3x-2)^4}$	$(3x-2)^4$
$e^x sinx$	$\frac{e^x}{sinx}$	e^{sinx}
$x^2\ln(x)$	$\frac{x^2}{\ln(x)}$	$\ln(x^2)$

Here is the formulae for the Product Rule

$$y = uv \qquad f(x) = g(x)\mathrm{h}(x)$$

$$\frac{dy}{dx} = u\frac{dv}{dx} + \frac{du}{dx}v \qquad f'(x) = g'(x)\mathrm{h}(x) + g(x)\mathrm{h}'(x)$$

Here is the formulae for the Quotient Rule

$$y = \frac{u}{v} \qquad f(x) = \frac{g(x)}{\mathrm{h}(x)}$$

$$\frac{dy}{dx} = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2} \qquad f'(x) = \frac{\mathrm{h}(x)g'(x) - \mathrm{h}'(x)g(x)}{[\mathrm{h}(x)]^2}$$