

<b>05</b>	<b>2b</b>	Differentiate with respect to $x$ : (ii) $\frac{x^2}{x-1}$	<b>2</b>
<p>Using quotient rule: <math>f'(x) = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2}</math>, where <math>u = x^2</math> <span style="float: right;"><math>v = x - 1</math></span></p> <p style="text-align: right;"><math>\frac{du}{dx} = 2x</math> <span style="margin-left: 100px;"><math>\frac{dv}{dx} = 1</math></span></p> $= \frac{(x-1) \cdot 2x - x^2 \cdot 1}{(x-1)^2}$ $= \frac{2x^2 - 2x - x^2}{(x-1)^2}$ $= \frac{x^2 - 2x}{(x-1)^2}$ $= \frac{x(x-2)}{(x-1)^2}$			

\* These solutions have been provided by *projectmaths* and are not supplied or endorsed by the Board of Studies

### Board of Studies: Notes from the Marking Centre

Very few candidates attempted to rewrite the question in the form of the product rule, with most candidates using the quotient rule. Many responses contained significant errors in simplifying, such as incorrect cancelling.

Source: [http://www.boardofstudies.nsw.edu.au/hsc\\_exams/](http://www.boardofstudies.nsw.edu.au/hsc_exams/)