> $x^2 \cdot u - y^2 \cdot v = 1; x + y = u \cdot v;$ *## Given equations...*

$$x^2 u - y^2 v = 1$$
$$x + y = u v \quad (1)$$

> $\left(\frac{\delta x}{\delta u}\right)_v = \frac{2 \cdot y \cdot v^2 - x^2}{2 \cdot y \cdot v + 2 \cdot x \cdot u}$; *## What I'm looking for, and the* "answer". *This is funky physicist notation for the partial derivative of x with respect to u where v is held constant − the book says that pure math−ies use a different notation.*

$$\left(\frac{\delta x}{\delta u}\right)_v = \frac{2 y v^2 - x^2}{2 y v + 2 x u} \quad (2)$$

> $2 \cdot x \cdot u \cdot dx + x^2 \cdot du - 2 \cdot y \cdot v \cdot dy - y^2 \cdot dv = 0; dx + dy = u \cdot dv + v \cdot du;$ *## Step one, differentiating the given equations.*

$$2 x u\, dx + x^2\, du - 2 y v\, dy - y^2\, dv = 0$$
$$dx + dy = u\, dv + v\, du \quad (3)$$

> $2 \cdot x \cdot u \cdot dx + x^2 \cdot du - 2 \cdot y \cdot v \cdot dy = 0; dx + dy = v \cdot du;$ *## v held constant, so dropped the dv terms.*

$$2 x u\, dx + x^2\, du - 2 y v\, dy = 0$$
$$dx + dy = v\, du \quad (4)$$

> *## It's at this point that my textbook goes into some bizarre explanation (a generous term for it) of a matrix method for determining the chain rule, and I completely lose what I'm supposed to be doing.*

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