Example: Q1 problem sheet

Consider a wire under tension.

a. What are the relevant variables needed to describe the system?

b. What are the constraints on these?

c. How many degrees of freedom does such a system have?

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Example: Q2 problem sheet

If f(x, y, z) = 0 show that

 $a. \left(\frac{\partial x}{\partial y}\right)_{z} = \frac{1}{(\partial y/\partial x)_{z}}$ 

 $b_x \left(\frac{\partial x}{\partial y}\right)_z \left(\frac{\partial y}{\partial z}\right)_x \left(\frac{\partial z}{\partial x}\right)_y = -1$ 

$$f(x,y,t)=0 \implies x=x(y,t)$$

$$dx = \left(\frac{\partial x}{\partial y}\right)_{1} \frac{\partial y}{\partial x} + \left(\frac{\partial x}{\partial x}\right)_{2} \frac{\partial z}{\partial x}$$

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$$\left(dy\left(\frac{39}{5x}\right)_{x}dx+\left(\frac{39}{5x}\right)_{x}dz\right)$$

$$dx = \left(\frac{3x}{39}\right)_{x} \left(\left(\frac{35}{3x}\right)_{x} dx + \left(\frac{35}{3x}\right)_{x} dx \right] = \left(\frac{3x}{3x}\right)_{x} dx$$

$$dx = \left(\frac{Jx}{Jy}\right)_{7} \left(\frac{Jy}{Jx}\right)_{7} dx + \left(\frac{Jx}{Jy}\right)_{7} \left(\frac{Jy}{Jy}\right)_{7} dz$$

This is interpretine of those of inclip variable.

a) Set 
$$dx = 0$$

$$\left(\frac{Jx}{Jy}\right)_{2} \left(\frac{Jy}{Jx}\right)_{2} = 0$$

This must be inexpedice of chain of 
$$\left(\frac{dx}{dy}\right) = \left(\frac{dx}{dy}\right) + \left(\frac{dx}{dy}\right) + \left(\frac{dx}{dy}\right) = \left(\frac{dx}{dy}\right) + \left(\frac{dx}{$$