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How to Write Math in the Discussions using MathJax

Coursera uses MathJax, and math is written using LaTeX syntax, enclosed in double-dollar signs. For example,

`$$a_1b_2 - a_2b_1$$`

will look to the reader like

$a_1b_2 - a_2b_1$.

For those of you who don't know LaTeX, I will show you how to write some math expressions that you can use to model your mathematical writing. For a more general overview of the syntax, you may refer to

https://math.meta.stackexchange.com/questions/5020/mathjax-basic-tutorial-and-quick-reference

Here are a selection of some sample math expressions from this course. Remember to add the double-dollar signs to the math expressions (not added here to prevent MathJax from translating).

(1)

`\mathbf A + \mathbf B = (A_1+B_1)\mathbf i + (A_2+B_2)\mathbf j + (A_3+B_3)\mathbf k`

$$\mathbf A + \mathbf B = (A_1+B_1)\mathbf i + (A_2+B_2)\mathbf j + (A_3+B_3)\mathbf k$$

(2)

`\mathbf A\times \mathbf B = \begin{vmatrix}\mathbf i&\mathbf j&\mathbf k\\A_1&A_2&A_3\\B_1&B_2&B_3\end{vmatrix}`

$$\mathbf A\times \mathbf B = \begin{vmatrix}\mathbf i&\mathbf j&\mathbf k\\A_1&A_2&A_3\\B_1&B_2&B_3\end{vmatrix}$$

(3)

`\mathbf A \cdot \mathbf B = \mathbf B \cdot \mathbf A`

$$\mathbf A \cdot \mathbf B = \mathbf B \cdot \mathbf A$$

(4)

`\displaystyle \frac{x-x_0}{u_1} = \frac{y-y_0}{u_2} = \frac{z-z_0}{u_3}`

$$\displaystyle \frac{x-x_0}{u_1} = \frac{y-y_0}{u_2} = \frac{z-z_0}{u_3}$$

(5)

`\delta_{ij} = \begin{cases} 1, & \text{if } i=j;\\ 0, & \text{if } i\ne j. \end{cases}`

$$\delta_{ij} = \begin{cases} 1, & \text{if } i=j;\\ 0, & \text{if } i\ne j. \end{cases}$$

(6)

`\displaystyle \frac{\partial^2 f}{\partial x\partial y}=  \frac{\partial^2 f}{\partial y\partial x}`

$$\displaystyle \frac{\partial^2 f}{\partial x\partial y}= \frac{\partial^2 f}{\partial y\partial x}$$

(7)

`\boldsymbol\nabla \times \boldsymbol\nabla f`

$$\boldsymbol\nabla \times \boldsymbol\nabla f$$

(8)

`\displaystyle \int_{y_0}^{y_1} \int_{x_0}^{x_1} f(x, y) \, dx \, dy`

$$\displaystyle \int_{y_0}^{y_1} \int_{x_0}^{x_1} f(x, y) \, dx \, dy$$

(9)

`\displaystyle \frac{d\hat{\mathbf r}}{d\theta} = \hat{\theta}`

$$\displaystyle \frac{d\hat{\mathbf r}}{d\theta} = \hat{\theta}$$

(10)

`\int_V \left(\boldsymbol\nabla\cdot {\mathbf u}\right) \,dV = \oint_S {\mathbf u}\cdot d{\mathbf S}`

$$\int_V \left(\boldsymbol\nabla\cdot {\mathbf u}\right) \,dV = \oint_S {\mathbf u}\cdot d{\mathbf S}$$

(11)

`\int_S \left(\boldsymbol\nabla \times {\mathbf u}\right) \cdot d{\mathbf S} = \oint_C {\mathbf u}\cdot d{\mathbf r}`

$$\int_S \left(\boldsymbol\nabla \times {\mathbf u}\right) \cdot d{\mathbf S} = \oint_C {\mathbf u}\cdot d{\mathbf r}$$