

SymPy Calculus II

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1 Vectors and Matrices

$$\begin{bmatrix} u_1 \\ u_2 \\ u_3 \end{bmatrix}$$

$$\begin{bmatrix} v_1 \\ v_2 \\ v_3 \end{bmatrix}$$

$$\begin{bmatrix} 2u_1 + v_1 \\ 2u_2 + v_2 \\ 2u_3 + v_3 \end{bmatrix}$$

$$u_1v_1 + u_2v_2 + u_3v_3$$

$$\begin{bmatrix} u_2v_3 - u_3v_2 \\ -u_1v_3 + u_3v_1 \\ u_1v_2 - u_2v_1 \end{bmatrix}$$

$$\sqrt{|u_1|^2 + |u_2|^2 + |u_3|^2}$$

$$proj_v(u) = \frac{u \cdot v}{|v|^2}v$$

$$\begin{bmatrix} \frac{v_1(u_1v_1+u_2v_2+u_3v_3)}{|v_1|^2+|v_2|^2+|v_3|^2} \\ \frac{v_2(u_1v_1+u_2v_2+u_3v_3)}{|v_1|^2+|v_2|^2+|v_3|^2} \\ \frac{v_3(u_1v_1+u_2v_2+u_3v_3)}{|v_1|^2+|v_2|^2+|v_3|^2} \end{bmatrix}$$

2 Vector Calculus

$$\begin{bmatrix} 3t \\ \sin(t) \\ t^2 \end{bmatrix}$$

$$\begin{bmatrix} 3 \\ \cos(t) \\ 2t \end{bmatrix}$$

$$\arccos\left(\frac{4t - \sin(t)\cos(t)}{\sqrt{|\sin(t)|^2 + 4}\sqrt{4|t|^2 + |\cos(t)|^2 + 9}}\right)$$

0.251108015692338

