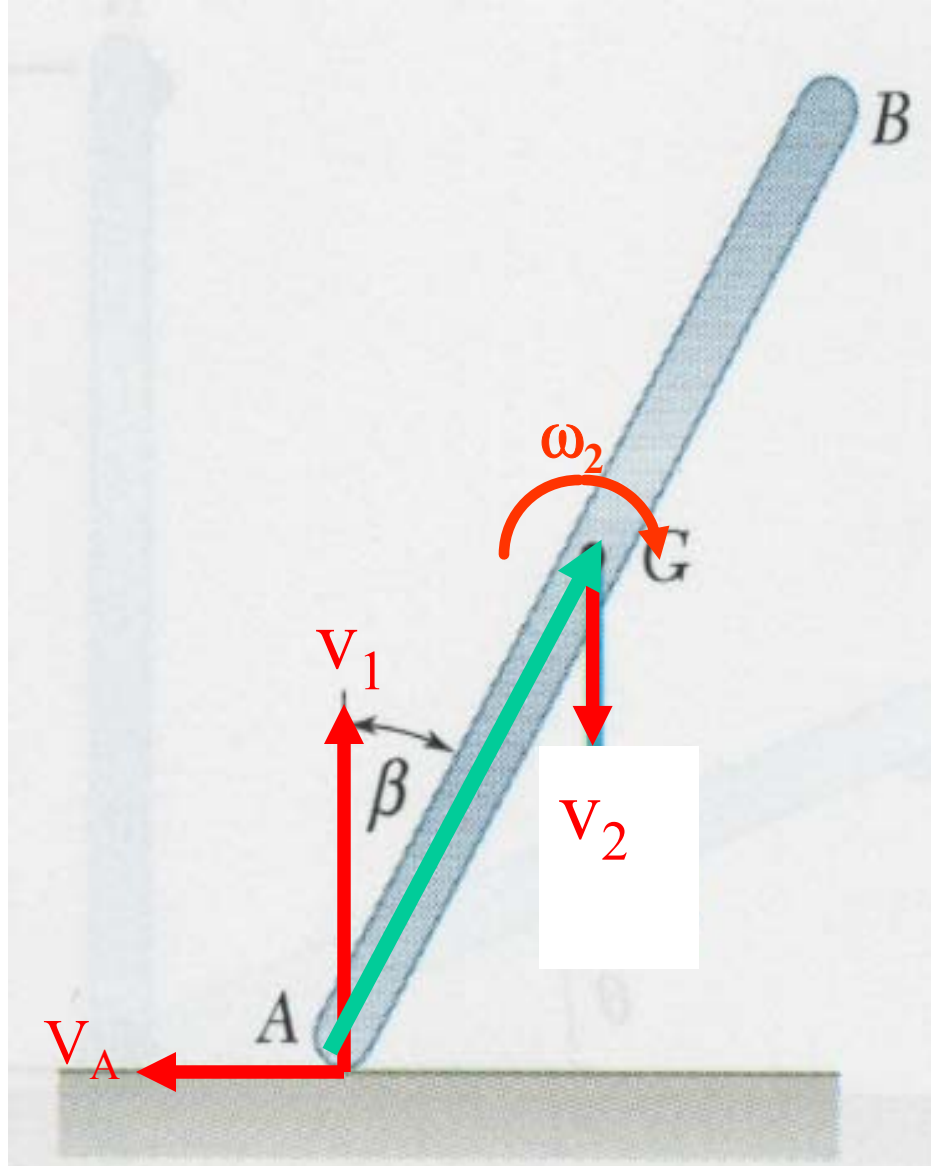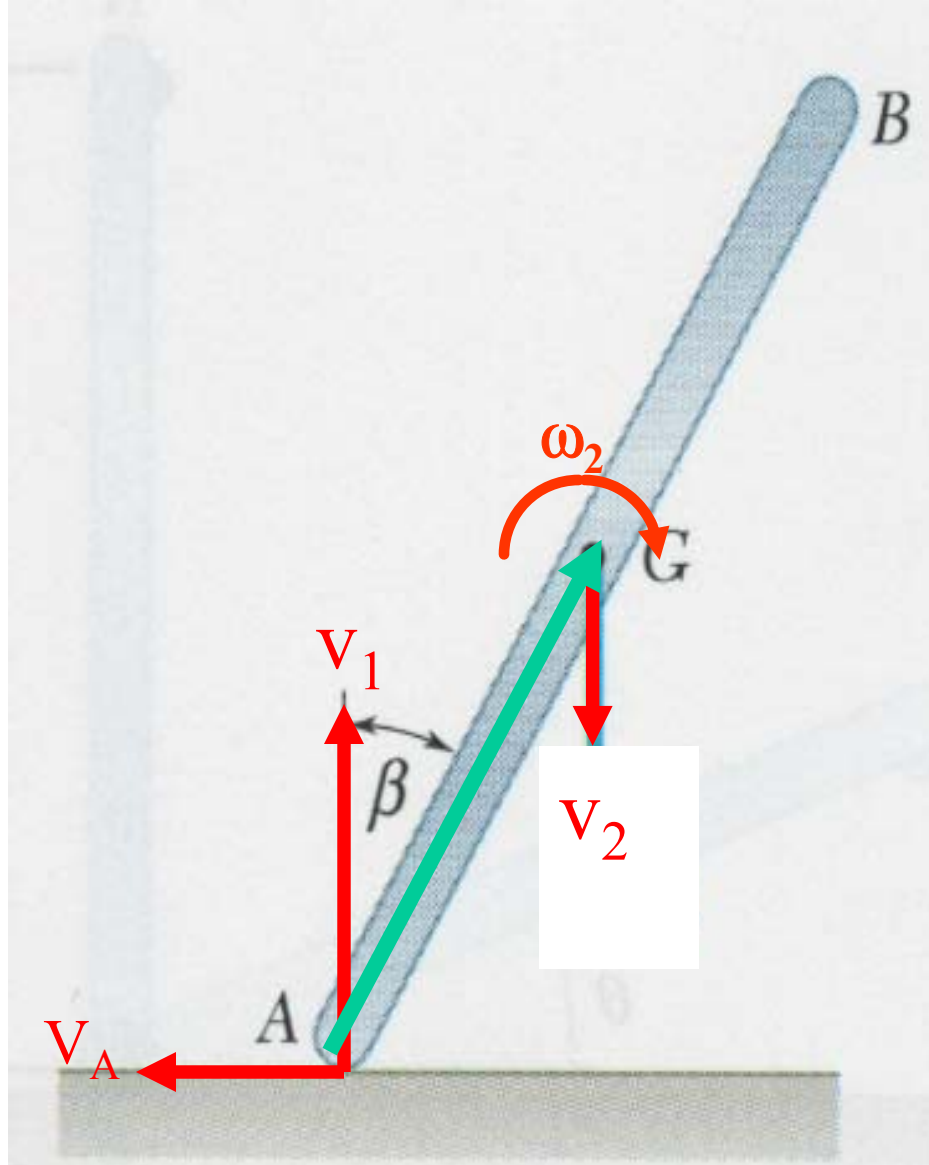$$\mathbf{v}_G = v_A \, \mathbf{i} + v_1 \, \mathbf{j} + \omega \times \mathbf{r}_{G/A}$$

$$- v_2 \mathbf{j} = v_A \mathbf{i} + v_1 \mathbf{j} - \omega \mathbf{k} \times r_{G/A}(\sin\beta \, \mathbf{i} + \cos\beta \, \mathbf{j})$$

$$- v_2 = + v_1 - \omega\, r_{G/A} \sin\beta$$