1. (3 points) Describe Varignon’s theorem.

2. (7 points) For the force system shown, determine (a) the resultant moment $M_A^R$ about the point $A$, (b) the resultant moment $M_{AB}^R$ about the axis passing through the points $A$ and $B$.

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1. Varignon’s theorem states that the moment of a force about any point is equal to the sum of the moments of its components about the same point.

2. \[ T_{DE} = \frac{T_{DE}}{3}(-\mathbf{i} + 2\mathbf{j} - 2\mathbf{k}) \quad \lambda_{AB} = \frac{1}{3}(2\mathbf{i} + \mathbf{j} - 2\mathbf{k}) \]

\[
M_A^R = (-4B_y + 2B_z)\mathbf{i} + \left(\frac{4}{3}T_{DE} + 4B_x - 4B_z + 900\right)\mathbf{j} + \left(\frac{4}{3}T_{DE} + 2B_x - 4B_y\right)\mathbf{k} \text{ N·m}
\]

\[
M_{AB}^R = \lambda_{AB} \cdot M_A^R \quad M_{AB}^R = 300 - \frac{4}{9}T_{DE} \text{ N·m}
\]