

Name: _____ ID: _____

1. Let A be the point at $(0, 6, -1)$, and let B be the point at $(3, 4, 4)$. Write down the vector \overrightarrow{AB} in component form.

Solution: We compute the motion necessary to get from A to B .

$$\overrightarrow{AB} = \langle 3 - 0, 4 - 6, 4 - (-1) \rangle = \langle 3, -2, 5 \rangle.$$

2. Compute the dot product

$$(\mathbf{i} + 2\mathbf{j} - 3\mathbf{k}) \cdot (2\mathbf{j} - \mathbf{k}).$$

Solution: Converting to component form, we compute

$$(\mathbf{i} + 2\mathbf{j} - 3\mathbf{k}) \cdot (2\mathbf{j} - \mathbf{k}) = \langle 1, 2, -3 \rangle \cdot \langle 0, 2, -1 \rangle = (1)(0) + (2)(2) + (-3)(-1) = 7.$$