DOT PRODUCT - ANSWERS

Find the dot product $\vec{u} \cdot \vec{v}$

1. $\vec{u} = 2\hat{i} + 3\hat{j} - 2\hat{k}$
    $\vec{v} = -4\hat{i} + 4\hat{j} + 3\hat{k}$

    $\vec{u} \cdot \vec{v} = -8 + 12 - 6 = -2$

2. $\vec{u} = 4\hat{i} + 2\hat{j} + \hat{k}$
    $\vec{v} = -\hat{i} + 4\hat{j} - 2\hat{k}$

    $\vec{u} \cdot \vec{v} = -4 + 8 - 2 = 2$

3. $\vec{u} = 2\hat{i} + 3\hat{j}$
    $\vec{v} = -4\hat{i} + 4\hat{j}$

    $\vec{u} \cdot \vec{v} = -8 + 12 = 4$

4. $\vec{u} = 5\hat{i} + \hat{j}$
    $\vec{v} = 3\hat{i} + 2\hat{j}$

    $\vec{u} \cdot \vec{v} = 15 + 2 = 17$

5. $\vec{u} = \hat{i}$
    $\vec{v} = \hat{j}$

    $\vec{u} \cdot \vec{v} = 1 \cdot 0 + 0 \cdot 1 = 0$