PERPENDICULAR AND PARALLEL VECTORS

Determine if the following vectors are perpendicular, parallel, or neither.

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

2. $\vec{u} = 2\hat{i} + 3\hat{j}$ and $\vec{v} = 4\hat{i} + 6\hat{j}$

3. $\vec{u} = 2\hat{i} + 3\hat{j}$ and $\vec{v} = -6\hat{i} - 9\hat{j}$

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

5. $\vec{u} = 2\hat{i} + 3\hat{j} + \hat{k}$ and $\vec{v} = 2\hat{i} + 2\hat{j} - 10\hat{k}$

6. $\vec{u} = \hat{i} + \hat{j} - 5\hat{k}$ and $\vec{v} = 2\hat{i} + 2\hat{j} - 10\hat{k}$

7. $\vec{u} = -\hat{i} - \hat{j} + 5\hat{k}$ and $\vec{v} = 2\hat{i} + 2\hat{j} - 10\hat{k}$

8. $\vec{u} = -\hat{i} - \hat{j} - 5\hat{k}$ and $\vec{v} = 2\hat{i} + 2\hat{j} - 10\hat{k}$

9. $\vec{u} = -\hat{i} - 24\hat{j} - 5\hat{k}$ and $\vec{v} = 2\hat{i} + 2\hat{j} - 10\hat{k}$