1. If $\mathbf{v} = \langle 3, -5 \rangle$ and $\mathbf{u} = \langle 2, 4 \rangle$ are vectors in $\mathbf{R}^2$, find the following:

a. $3\mathbf{v} + 4\mathbf{u}$

b. $5\mathbf{u} - 2\mathbf{v}$

c. $|\mathbf{v}|$

d. Find a unit vector that is parallel to $\mathbf{u}$

e. $\mathbf{v} \cdot \mathbf{u}$

f. Is $\mathbf{v}$ and $\mathbf{u}$ perpendicular to each other? Explain

g. Find the angle formed between $\mathbf{v}$ and $\mathbf{u}$