

Name: _____
PreCalculus

Date: 3/31/15
Ms. Wilson

Finding Forces Using Vectors

For questions 1-4, find the vector projection of \mathbf{u} onto \mathbf{v} . Then, write \mathbf{u} as a sum of two orthogonal vectors, one of which is $\text{proj}_{\mathbf{v}}\mathbf{u}$.

1.) $\mathbf{u} = \langle -2, 8 \rangle, \mathbf{v} = \langle 9, -3 \rangle$

2.) $\mathbf{u} = \langle 8, 5 \rangle, \mathbf{v} = \langle -9, -2 \rangle$

3.) $\mathbf{u} = \langle 1, 7 \rangle, \mathbf{v} = \langle 8, 2 \rangle$

4.) $\mathbf{u} = \langle 0, 5 \rangle, \mathbf{v} = \langle 8, 0 \rangle$

5.) John is sitting on a sled of a hill inclined at 60° . The combined weight of John and the sled is 160 pounds. What is the magnitude of the force required for Jennifer to keep the sled from sliding down the hill?

6.) John and Jennifer switch places. If the combined weight of Jennifer and the sled is 125 pounds, how much force does John need to exert to keep her from sliding down the hill?