

Name: \_\_\_\_\_

Major/minor: \_\_\_\_\_

**Math 2030, Winter 2016, Quiz 1**  
**15 January 2016**  
**R. Bruner**

*No calculators needed or allowed.*

Let  $\vec{u} = (3, 6, 9)$  and  $\vec{v} = (1, 4, 3)$ . Compute

1.  $|\vec{v}|$ ,
2.  $\vec{u} + 3\vec{v}$ ,
3.  $\vec{u} - \vec{v}$ ,
4. the point half way between  $(3, 6, 9)$  and  $(1, 4, 3)$ ,
5.  $\vec{w} = \text{proj}_{\vec{v}} \vec{u}$ ,
6.  $(\vec{u} - \vec{w}) \cdot \vec{v}$ ,
7. the angle between  $(\vec{u} - \vec{w})$  and  $\vec{v}$ .

Answers: