

## Math 2260 Quiz 20

Name \_\_\_\_\_

*Points will be deducted for untidy or disorganized answers*

1. (1 point) Find the center and radius of the sphere

$$x^2 + y^2 + z^2 + 4x - 4z = 0$$

2. (1 point) Find a vector of magnitude 7 in the direction of  $\mathbf{v} = 12\mathbf{i} - 5\mathbf{k}$

3. (3 points) Let  $\mathbf{u} = 3\mathbf{j} + 4\mathbf{k}$  and  $\mathbf{v} = 10\mathbf{i} + 11\mathbf{j} - 2\mathbf{k}$ . Find

- (a)  $\mathbf{u} \cdot \mathbf{v}$  and  $|\mathbf{v}|$
- (b) the scalar component of  $\mathbf{u}$  in the direction of  $\mathbf{v}$
- (c) the vector projection of  $\mathbf{u}$  onto  $\mathbf{v}$ ,  $\text{proj}_{\mathbf{v}}\mathbf{u}$