

QUIZ 1 - MATH 251

Friday, August 28

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [9 points] Consider two vectors $\mathbf{v} = \langle -2, -4 \rangle$ and $\mathbf{u}$ having initial point $(1, 2)$ and terminal point $(-1, 4)$.
 - (a) Compute the vector $\mathbf{w} = -3\mathbf{v} + \mathbf{u}$ in coordinate form.
 - (b) Find the length $\|\mathbf{w}\|$.
 - (c) Find a vector pointing in the opposite direction of $\mathbf{w}$, with length 3.

2. [6 points] Consider the points $C = (2, -3, 1)$ and $P = (4, -2, -2)$.

- (a) Find the distance between C and P .
- (b) Find an equation for the plane passing through P and parallel to the xz -coordinate plane.
- (c) Find an equation for the sphere centered at C and containing the point P .