MTH241 Fall 2024: Quiz 01

Name:
UID:

Closed book, no calculator, show your work clearly.

1. (5pt) Show that $x^2+y^2+z^2+2x-4y+6z-8=0$ is the equation of a sphere. Find the center and radius of this sphere. (Grading: **1pt**: working; **2pt**: proof; **2pt**: center and radius)

2. (5pt) Let $\vec{a}=\vec{i}+2\vec{j}+3\vec{k}$, and $\vec{b}=4\vec{i}+5\vec{j}+6\vec{k}$. Find the projection of $\vec{a}$ onto $\vec{b}$ and the projection of $\vec{b}$ onto $\vec{a}$. (Grading: **1pt**: working; **2pt**: first projection; **2pt**: second projection)