# QUIZ #1

CALC 160, SPRING 2006

Name KEY IHRTLUHC

1) Define vector addition and give the formulas for it in $\mathbb{R}^2$ and $\mathbb{R}^3$.

Def If $\vec{u}$ and $\vec{v}$ are vectors positioned so that the initial point of $\vec{v}$ is the terminal point of $\vec{u}$, then the sum $\vec{u}+\vec{v}$ is the vector from the initial point of $\vec{u}$ to the terminal point of $\vec{v}$.


In $\mathbb{R}^2$: $\langle a,b\rangle + \langle c,d\rangle = \langle a+c, b+d\rangle$

in $\mathbb{R}^3$: $\langle a,b,c\rangle + \langle d,e,f\rangle = \langle a+d, b+e, c+f\rangle$

2) Find the equation of the sphere with center $(1,2,3)$ and passing through the point $(2,4,4)$.

We first need the radius, which is

$$\text{dist}((1,2,3),(2,4,4)) = \sqrt{(2-1)^2+(4-2)^2+(4-3)^2} = \sqrt{1+4+1} = \sqrt{6}$$

Then the equation is

$$(x-1)^2+(y-2)^2+(z-3)^2 = 6.$$

center $(1,2,3)$

radius$^2$