

MAT 175 HOMEWORK #2

DUE SEPTEMBER 28 (WEDNESDAY)

Note: Please indicate your student ID #. Numbering of problems is as in the course textbook.

(10.8.3) Name the conic that has the given equation, find its vertices, and sketch its graph:

$$9x^2 + 4y^2 - 36 = 0$$

(10.8.6) Name the conic that has the given equation, find its vertices, and sketch its graph:

$$x^2 - 4y^2 - 16 = 0$$

(10.8.8) Name the conic that has the given equation, find its vertices, and sketch its graph:

$$9x^2 + 9y^2 - 225 = 0$$

(11.1.6) Show that $(4, 5, 3)$, $(1, 7, 4)$, and $(2, 4, 6)$ are the vertices of an equilateral triangle.

(11.1.12) Find the equation of the sphere whose center is $(2, 4, 5)$ and that is tangent to the xy -plane.

(11.1.18) Sketch the graph of the given equation. Begin by sketching the traces in the coordinate planes.

$$3x - 4y + 2z = 24$$

(11.1.22) Sketch the graph of the given equation. Begin by sketching the traces in the coordinate planes.

$$3x + 4z = 12$$

(11.1.37) Find the equation of the sphere that has the line segment joining $(-2, 3, 6)$ and $(4, -1, 5)$ as a diameter.

(11.2.2) Draw the vectors $\vec{u} = \langle 2, 0 \rangle$, $\vec{v} = \langle 1, 1 \rangle$ and $\vec{w} = 2\vec{u} - 3\vec{v}$.

(11.2.14) Let $\vec{u} = \langle 0, 0, 0 \rangle$ and $\vec{v} = \langle -3, 3, 1 \rangle$. Find the sum $\vec{u} + \vec{v}$, the difference $\vec{u} - \vec{v}$, the magnitudes $\|\vec{u}\|$, $\|\vec{v}\|$, and a unit vector in the direction of \vec{v} .