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MAC 2313.9728
Cyr

Quiz 2

You must show all work to receive full credit!!

Problem 1. (4 points) Find a vector equation for the line segment from the point $(6, -1, 9)$ to the point $(7, 6, 0)$.

$$\text{Direction vector } \hat{v} = \langle 7, 6, 0 \rangle - \langle 6, -1, 9 \rangle = \langle 1, 7, -9 \rangle$$

$$\hat{r}(t) = \hat{v}_0 + t\hat{v} = \langle 6, -1, 9 \rangle + t\langle 1, 7, -9 \rangle$$

$$= \boxed{\langle 6+t, -1+7t, 9-9t \rangle, \quad 0 \leq t \leq 1}$$

Problem 2. (6 points) Consider the quadric surface given by the equation

$$\frac{x^2}{9} + \frac{y^2}{25} + \frac{z^2}{4} = 1.$$

- (a) Identify the type of (two-dimensional) curve given by the traces $x = 0$, $y = 0$, and $z = 0$.
(b) Use the information from part (a) to classify the surface.
(c) Sketch a graph of the surface.

$$(a) \ x=0: \frac{y^2}{25} + \frac{z^2}{4} = 1 \quad \text{ellipse}$$

(b) ellipsoid

$$y=0: \frac{x^2}{9} + \frac{z^2}{4} = 1 \quad \text{ellipse}$$

(c)

$$z=0: \frac{x^2}{9} + \frac{y^2}{25} = 1 \quad \text{ellipse}$$

