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September 8, 2016
MAC 2313.6717
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 $(-3, 1, 0)$ to the point $(-1, 5, 6)$.

Direction vector $\hat{v} = \langle -1, 5, 6 \rangle - \langle -3, 1, 0 \rangle = \langle 2, 4, 6 \rangle$

$\hat{r}(t) = \hat{v}_0 + t\hat{v} = \langle -3, 1, 0 \rangle + t\langle 2, 4, 6 \rangle$

$= \boxed{\langle -3 + 2t, \ 1 + 4t, \ 6t \rangle, \quad 0 \le t \le 1}$

Problem 2. (~~5 points~~) (6 points) Consider the quadric surface given by the equation
$$y = z^2 + x^2.$$

(a) Identify the type of (two-dimensional) curve given by the traces $x = 0, z = 0$, and $y = 1$.
(b) Use the information from part (a) to classify the surface.
(c) Sketch a graph of the surface.

(a) $x = 0:$ $y = z^2$ parabola

$z = 0:$ $y = x^2$ parabola

$y = 1:$ $z^2 + x^2 = 1$ circle

(b) Elliptic paraboloid

(central axis y-axis)

(c)

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