Name: ID #: Section #:

Q1) (a) [**3pts**] Find and sketch the domain of $f(x,y) = \sqrt{1-x^2} - \sqrt{1-y^2}$.

(b) [**1pt**] Draw a contour map of $f(x,y) = x^2 + 9y^2$.

Solution:

Q2) [**3pts**] Classify and sketch the surface $4y^2 + z^2 - x - 16y - 4z + 20 = 0$.

Solution:

Q3) [**3pts**] Find symmetric equations for the line of intersection of the planes $5x - 2y - 2z = 1$ and $4x + y + z = 6$.

Solution:

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Q1) [**3pts**] Find and sketch the domain of $f(x, y) = \sqrt{y} + \sqrt{25 - x^2 - y^2}$.

Solution:

Q2) [**3pts**] Classify and sketch the surface $x^2 - y^2 + z^2 - 2x + 2y + 4z + 2 = 0$.

Solution:

Q3) (a) [**1.5pts**] Find the point at which the given lines intersect:
$\vec{r} = \langle 1, 1, 0\rangle + t\langle 1, -1, 2\rangle$,
$\vec{r} = \langle 2, 0, 2\rangle + s\langle -1, 1, 0\rangle$

(b) [**2.5pts**] Find an equation of the plane that contains these two lines.

Solution: