Name: ID #: Section #:

Q1) [**3pts**] Classify and sketch the surface $z^2 = 4x^2 + 9y^2 + 36$.

Q2) [**3pts**] Find and sketch the domain of $f(x, y) = \ln(4 - x^2 - y^2) + \ln(1 - y^2)$.

Q3) [**4pts**] Find an equation of the plane through the point $(1, 1, -1)$ that contains the line $x = 2t,\ y = 3 - t,\ z = 1 + 3t$.

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Q1) [**3pts**] Classify and sketch the surface $x^2 - y^2 + z^2 - 2x + 2y + 4z + 2 = 0$.

Q2) [**3pts**] Find and sketch the domain of $f(x, y) = \ln(9 - x^2 - y^2) + \ln(1 - x^2)$.

Q3) [**4pts**] Find an equation of the plane through the point $(-1, -1, 1)$ that contains the line $x = t,\ y = 2 - t,\ z = 1 + 2t$.