Read each question carefully and be sure to SHOW ALL WORK. Correct answer without proper justification will not receive a "Complete" grade. Paç fat! Good luck!

Name: _____

LO 16. Polar/Parametric and Conic Sections Challenge. I can use polar, parametric and conic sections creatively in new situations that require a deep understanding of them.

Criteria for Success: I can solve conceptual questions related to Polar and Parametric equations that lie on the top half of Bloom's Taxonomy (analyze, evaluate, and create).

Question: Consider a mirror in the shape of the conic section given by $r = \dfrac{10}{9 - 6\sin(\theta)}$.

(a) Find the x and y intercept(s), the center, the focus(foci), and eccentricity.

(b) Suppose you are standing at the origin in the dark, and shoot a light ray horizontally to the left along the negative x-axis. Draw the path of the light ray, and describe it in relation to the focii and/or axis of symmetry.

(c) Find the area enclosed by the interior of this conic section that lies on the third quadrant. **Setup but do not solve the integral.**

(d) Find the arclength of this conc section that lies on the third quadrant. **Setup but do not solve the integral.**