

YOUR NAME: \_\_\_\_\_

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Consider the equation  $r = \frac{2}{10 + \sin \theta}$ ;

(a) Write the equation in the standard form;

(b) Find the eccentricity;

(c) Identify the conic;

(d) Give an equation for the directrix;

(e) Sketch the graph;

2. Find an equation for the ball (sphere and its interior) centered at  $(7, 20, 25)$ , whose boundary includes the point  $(10, 18, 32)$ ;

