Test on Conic Sections

Name: ___________________________  Date: ______________  Block: __________

Part I. Graph each of the following quadratic equations. In your graph, include the center, foci, directrix or asymptotes if appropriate. (10 points each)

1. \((x + 2)^2 + (y - 1)^2 = 9\)
2. \(\frac{(x + 1)^2}{16} - \frac{(y - 2)^2}{9} = 1\)
3. \(\frac{(y + 1)^2}{16} + \frac{(x - 2)^2}{9} = 1\)
4. \((y + 3)^2 = 4(-2)(x - 4)\)

Part II. Identify the conic section represented by each of the following equations. (5 points each)

1. \(-7x^2 + 4y^2 - 3x - 7y + 18 = 0\)  _________________________
2. \(x^2 - 2x - 8y - 7 = 0\)  _________________________
3. \(x^2 + 4y^2 + 5x - 2y - 144 = 0\)  _________________________
4. \(x^2 + y^2 - 4x + 6y + 9 = 0\)  _________________________
Part III. Write the standard equation for the conic section that corresponds to each graph below. (10 points each)

1. 

2. 

Part IV. Rewrite the equation $9x^2 + 4y^2 - 54x - 8y + 49 = 0$ in the appropriate standard form. (10 points)
Part V. Mr. Nunn spends a relaxing day with his RC Car. At the moment you observe him, he’s manipulating the car so that it orbits him in the elliptical path that brings the car 4 feet from him at its closest and 8 feet from him at its farthest. Taking Mr. Nunn to be the origin, give an equation that describes the car’s path. (5 points)
Part VI. A few minutes later, Mr. Nunn changes the car’s orbit to a constant, circular distance of 6 feet. Now taking yourself to be the origin, give an equation that describes the car’s path. (5 points)