Name : _____

Six problems are given. Complete four or more of the (most challenging) problems.
Compare your curve sketch with Desmos, for example, by typing (tan^2 t, sec t) or see
https://www.desmos.com/calculator/aur1fhegdz

1. Consider the curve $\begin{cases} x = 3 - 4t \\ y = 2 - 3t \end{cases}$, $-\infty < t < \infty$.
   a. Sketch the curve by plotting points. Indicate with an arrow the direction in which the curve is traced as t increases.
   b. Eliminate the parameter to find a Cartesian equation of the curve.

2. Consider the curve $\begin{cases} x = 1 - t^2 \\ y = t - 2 \end{cases}$, $-2 \le t \le 2$.
   a. Sketch the curve by plotting points. Indicate with an arrow the direction in which the curve is traced as t increases.
   b. Eliminate the parameter to find a Cartesian equation of the curve.

3. Consider the curve $\begin{cases} x = t^2 \\ y = \sqrt{t^4 + 1} \end{cases}$, $0 \le t < \infty$.
   a. Sketch the curve by plotting points. Indicate with an arrow the direction in which the curve is traced as t increases.
   b. Eliminate the parameter to find a Cartesian equation of the curve.

4. Consider the curve $\begin{cases} x = \sin\theta \\ y = \csc\theta \end{cases}$, $0 < \theta < \frac{\pi}{2}$.
   a. Eliminate the parameter to find a Cartesian equation of the curve.
   b. Sketch the curve and indicate with an arrow the direction in which the curve is traced as the parameter increases.

5. Consider the curve $\begin{cases} x = e^t - 1 \\ y = e^{2t} \end{cases}$, $-\infty < t < \infty$.
   a. Eliminate the parameter to find a Cartesian equation of the curve.
   b. Sketch the curve and indicate with an arrow the direction in which the curve is traced as the parameter increases.

6. Consider the curve $\begin{cases} x = \tan^2\theta \\ y = \sec\theta \end{cases}, -\frac{\pi}{2} < \theta < \frac{\pi}{2}.$
   a. Eliminate the parameter to find a Cartesian equation of the curve.
   b. Sketch the curve and indicate with an arrow the direction in which the curve is traced as the parameter increases.