Name: ID #: Section #:

Q1) [**4pts**]

(a) Sketch the parametric curve given by $x = \sin t,\ y = \csc t,\ 0 < t < \pi/2$. Indicate with an arrow the direction in which the curve is traced as t increases.

(b) If $x = t - e^t,\ y = t + e^{-t}$, find dy/dx and d^2y/dx^2.

Solution:

Q2) [**3pts**] Sketch the polar curve $r = 2 + \cos 2\theta$.

Solution:

Q3) [**3pts**] Find the area of the region that lies inside the curve $r = 3\cos\theta$ and outside the curve $r = 1 + \cos\theta$.

Solution:

Name: ID #: Section #:

Q1) [**4pts**]

(a) Sketch the parametric curve given by $x = 1 + \sqrt{t},\ y = t^2 - 4t,\ 0 \leq t \leq 5$. Indicate with an arrow the direction in which the curve is traced as t increases.

(b) Find an equation of the tangent to the curve $x = \tan\theta,\ y = \sec\theta$ at the point $(1, \sqrt{2})$.

Solution:

Q2) [**3pts**] Sketch the polar curve $r = 1 - 2\sin\theta$.

Solution:

Q3) [**3pts**] Find the area of the region that lies inside both the curves $r = 1 + \cos\theta$ and $r = 1 - \cos\theta$.

Solution: