Name:                                    ID #:                                    Section #:

1) [**3pts**] Sketch the curve $C: \quad x = 5\sin t, \quad y = t^2, \quad -\pi \le t \le \pi$, and indicate with an arrow the direction in which the curve is traced as the parameter increases.

2) [**4pts**]

  (a) Find an equation of the tangent line to the curve $x = e^{\sqrt{t}}, \quad y = t - \ln t^2$ at $t = 1$.

  (b) Find all points on the curve $r = e^{\theta}$ where the tangent line is horizontal or vertical.

3) [**3pts**] Find area of the region that lies inside the curve $r = 3\sin\theta$ and outside the curve $r = 2 - \sin\theta$.

Name: ID #: Section #:

1) [**3pts**] Sketch the curve $C : x = 2\cos t, \ y = t - \cos t, \ \ 0 \le t \le 2\pi$, and indicate with an arrow the direction in which the curve is traced as the parameter increases.

2) [**4pts**]

(a) Find the slope of the tangent line to the curve $r = \cos(\theta/3)$ at $\theta = \pi$.

(b) Find all points on the curve $x = a\cos^3\theta, \ \ y = a\sin^3\theta$ where the tangent line is horizontal or vertical.

3) [**3pts**] Find area of the region that lies inside the curve $r = 4\sin\theta$ and outside the curve $r = 2$.