MATH 151 Exam 5 Review Spring

1. Given $x = t^2 - 2$, $y = 5 - 2t$ eliminate the parameter to find a Cartesian equation.

2. Given $x = 1 + 3t^2$, $y = 4 + 2t^3$ find the length of the curve.

3. Find the slope of the tangent line to the curve $r = 1 + cos\ \theta$

4. Find the area enclosed by one loop of $r = 2\ cos\ 4\theta$

5. Find the surface area generated by rotating $x = e^t - t$, $y = 4e^{t/2}$, $0 \leq t \leq 1$ about the y-axis.

6. For which values of t is the curve concave upward? $x = 4 + t^2$, $y = t^2 + t^3$

7. Find the length of the curve. $x = e^t + e^{-t}$, $y = 5 - 2t$, $0 \leq t \leq 3$

8. Find the area of the region enclosed by one loop of the curve. $r = 4\ sin\ 3\theta$

9. Find the exact length of the polar curve. $r = 3\ sin\ \theta$, $0 \leq \theta \leq \pi/3$