Math 114
Spring 2009
Professor Readdy
Review Questions for Remainder of Course Material

1. Use the Maclaurin series for e^x to calculate $e^{0.1}$ correct to three decimal places.
2. Use the binomial theorem to evaluate 11^5. (Hint: $11 = 1 + 10$.)
3. Sketch the graphs of the parametric equations
   (a) $x = 3\sin t$, $y = 3\cos t$.
   (b) $x = 3\cos t$, $y = 3\sin t$.
4. Find the slope(s) of the tangent at the point $(1, 0)$ on the graph of $x = t$, $y = t^4 - 1$.
5. Find the slope(s) of the tangent at the point $(1, 0)$ on the graph of $x = t^2$, $y = t^4 - 1$.
6. Sketch the graphs of
   (a) $r = 2$
   (b) $r = -1$
   (c) $\theta = -\pi$
   (d) $r = 1 + \theta$
7. For each of the graphs in the previous question, find the slope to the tangent at the point $(1, 0)$ (assuming this point exists on the curve).
8. Sketch the graph of $r = 1 - \cos\theta$.
9. (a) Sketch $r^2 = \cos 2\theta$.
   (b) Find the area enclosed by this curve.
10. Find the area between the curves $r = 1 - \cos\theta$ and $r = 1 + \cos\theta$.
11. Find the slope of the tangent line to the curve $r = 5\cos 2\theta$ at the origin.