More Exam 2 Review

Name:_____

October 20-22, 2014

Directions: Work in groups to complete the following problems.

1. Evaluate the integral

    (a) $\int \frac{\sec(\theta)\tan(\theta)}{\sec^2(\theta)-\sec(\theta)}d\theta$

    (b) $\int \frac{1}{\sqrt{\sqrt{x}+1}}dx$

    (c) $\int \frac{x^3+3x-3}{x^3+x}dx$

    (d) $\int x^3 \ln(5x)dx$

    (e) $\int \tan^5(w)dw$

2. Calculate the integrals, if they converge.

    (a) $\int_{-2}^{3} \frac{1}{x^4}dx$

    (b) $\int_0^{\infty} xe^{-x^2}dx$

3. Find the equation of the tangent line to the curve $x = 6\sin(t)$ and $y = t^2 + t$ at the point (0,0).

4. Set up the integral that represents the length of the curve for $x = t + e^{-t}$ and $y = t - e^{-t}$ for $0 \le t \le 2$. Do not evaluate.

5. Determine if the sequence $a_n = \frac{(\ln(n))^2}{n}$ converges or diverges.

6. **Challenge Problem:** Evaluate $\int (\ln(x))^3 dx$

7. **Challenge Problem:** Calculate $\int e^{6x}\sin(e^{3x})dx$ using two different techniques.