Math 2554 Quiz 15: $\oint 5.5$ **(Substitution Rules)**
due: Thurs 30 Apr 2015

Name: _____

This quiz is due on Thursday, 30 April, 2015. You may use your brain, notes, book, other humans and any pet of your choice. Your solutions must be legible, in order, stapled, de-fringed, and with your name on the top right corner of each page. If you fail to meet any of these requirements you will receive a zero. Each question is worth one point and is all or nothing.

1. Find the following indefinite integrals. **Check each answer** by differentiating it and making sure the result is the same as the integrand.

   (a) $\displaystyle\int \frac{\left(\sqrt{x}+1\right)^4}{2\sqrt{x}}\,dx$

   (b) $\displaystyle\int x^9 \sin\left(x^{10}\right)\,dx$

   (c) $\displaystyle\int \frac{y}{\sqrt{y-4}}\,dy$

   (d) $\displaystyle\int \frac{e^x - e^{-x}}{e^x + e^{-x}}\,dx$

   (e) $\displaystyle\int \sin^2\left(\theta + \frac{\pi}{6}\right)\,d\theta$

2. Evaluate the following definite integrals. Your limits **must** be consistent with any change of variables you use.

   (a) $\displaystyle\int_0^1 2x(4-x^2)\,dx$

   (b) $\displaystyle\int_{-1}^2 x^2 e^{x^3+1}\,dx$

   (c) $\displaystyle\int_0^{\frac{\pi}{4}} \frac{\sin x}{\cos^2 x}\,dx$

   (d) $\displaystyle\int_1^{e^2} \frac{\ln x}{x}\,dx$

   (e) $\displaystyle\int_0^6 \frac{dz}{z^2+36}$