Problem Set 1   **Calculus 2**   **Due 1/24/18**

You are encouraged to work in groups of two to four on this assignment and make a single group submission. Each problem is worth 5 points. For full credit indicate clearly how you reached your answer.

1. Prove the reduction formula

$$\int \sec^n x \, dx = \frac{\tan x \sec^{n-2} x}{n-1} + \frac{n-2}{n-1} \int \sec^{n-2} x \, dx$$

2. Evaluate

$$\int e^x \cos x \, dx$$

3. Evaluate

$$\int \frac{\sqrt{a^2 - u^2}}{u^2} \, du$$

4. Evaluate

$$\int \frac{1}{(x^2 + 2x + 2)^2} \, dx$$