Math 165, Spring 2010, Lowman
Special Assign. 4, Solutions Part I

**Power Rules:**

\[ \frac{d}{dx} u(x)^n = n \cdot u(x)^{n-1} \cdot u'(x) \]

\[ \int u'(x) \cdot u(x)^n \; dx = \frac{u(x)^{n+1}}{n+1} + C \]

**Log Rules:**

\[ \frac{d}{dx} \ln u(x) = \frac{u'(x)}{u(x)} \]

\[ \int \frac{u'(x)}{u(x)} \; dx = \ln |u(x)| + C \]

**Exponential Rules:**

\[ \frac{d}{dx} e^{u(x)} = e^{u(x)} \cdot u'(x) \]

\[ \int e^{u(x)} \cdot u'(x) \; dx = e^{u(x)} + C \]

**Multiply by One Trick:**

\[ \int f(x) \; dx = \frac{1}{k} \int k \cdot f(x) \; dx \], \( k \) is Constant.